Read the Report of Joint Standardization Committee—Pages 13 and 14 of This Issue.

AMERICAN ARTISAN and Hardware Record

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Thoroughly Covers the Hardware, Stove, Sheet Metal, and Warm Air Heating and Ventilating Interests

AMERICAN ARTISAN and Hardware Record

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VOL. 86. No. 2. CHICAGO, JULY 14, 1923. $2.00 Per Year.

TO THOSE WHO SAY THAT THEY WANT TO PADDLE THEIR OWN CANOE.

This is the land of the free and the home of the brave.

Here, as in no other country, has the individual opportunities to develop himself and his business by his own initiative.

Here, as in no other country, may the individual reach positions of importance, responsibility and control in the business world, provided he is industrious and willing.

Here, as in no other country, may the workman of today be the employer of tomorrow, giving him a chance to see both sides of the problem.

But, while all these favorable conditions obtain, there is also this point to consider—which so many of us are prone to forget—that the man who stands alone, who refuses to lend his support to movements and activities which have for their purpose the improvement of conditions in his locality or in his field of enterprise, with all his independence, actually progresses at a slower rate and finds his path more difficult than those who give of their time, money and personal effort toward such improvement.

And the strange fact is that these men, who like to call themselves independent, really do not live up to their own attitude.

For example, they may be members of a church—and what is a church but one form of cooperation?

If they are married, they must have realized that family life is based on cooperation, and if theirs is to be "a happy union" there must be a "working together for the mutual good of father, mother and children."

They certainly are citizens of their community—and what else is a community than an organization of individuals, bound together by many ties of common interest. They pay taxes. They elect officials, they do many other things which are but expressions of their appreciation of the fact that without cooperation life cannot give the fullest possible measure of happiness to the greatest number of individuals.

And yet, when it comes to forming an organization with other business men in their own line they refuse to cooperate; they forget about the other fellow's happiness.

They "never believed in anything of that sort"; they "are getting along very nicely"; they "don't want to have anyone tell them what to do"; they "want to see what the other fellow does—if he comes in they may join; if he comes in they certainly will have nothing to do with it"; and a thousand other excuses.

But while they refuse to share in the burden of carrying on the organization work, they are perfectly willing and anxiously look forward toward reaping the benefits that come from that organization.

They are leeches.

No more and no less.

They reap where they have not sown.

A pretty poor sort of men they are.

Random Notes and Sketches.

By Sidney Arnold

Coming back from the St. Louis sheet metal convention some of us were reviewing the sessions, the talks, the speakers, the entertainments and everything else, giving praise to this and roasts to that, but in general agreeing that it was the best convention of the nineteen the National Association has held.

Harry Snow, of the Furnace Fan Corporation, had a grudge against a certain man who insisted on talking in every session, without regard as to whether his "ravings," as Harry called his remarks, were to the point or not, and to emphasize his point, he told the following story:

When the trial of a certain case in a New England country court was about half through, the evidence in favor of the defendant was so overwhelming that the judge broke in and ordered the jury to return a verdict of not guilty. The prisoner's lawyer, a fledgeling, however, refused to be robbed of his carefully prepared splurge of oratory and demanded that he be heard.

"Well," the court ruled, "ye can make yer speech if ye want to, Mr. Wilkins, but jest to guard against accident we're goin' to acquit yer client first."

* * *

Two colored laborers, whose crap game had been abruptly terminated by the sudden appearance of H. G. Goelitz, who is a partner of Enoch Purnell in the Chicago Elbow Machine Company, besides being a big street paving contractor, were debating hotly as to whether the hastily gathered up cubes had shown six or seven points at the last inspection. Finally one doubled his fist, extended it to within an inch of the other's nose, and announced:

"See dat fis', uselessness? Gin Ah hits yo' 'side de face wid dat, yo' gwine see down yo' back 'thout turnin' you haid!"

"Huh! Am *dat* so, street sweepin's? See mah foot? Oncet Ah kicks yo' wid dat, eve'y time yo' sits down yo' leaves a footprint."

* * *

Gaar Williams, the clever cartoonist of the *Chicago Daily Tribune*, has the happy faculty of choosing his subjects, and he certainly draws his pictures so that everybody immediately sees the point.

I am not quite sure, however, whether he actually saw John Bogenberger of the Consolidated Sheet Metal Works, Milwaukee, at the unfortunate moment when John fell off the chair, but the accompanying illustration which appeared in a recent issue of the *Tribune* certainly reminded me very much of him.

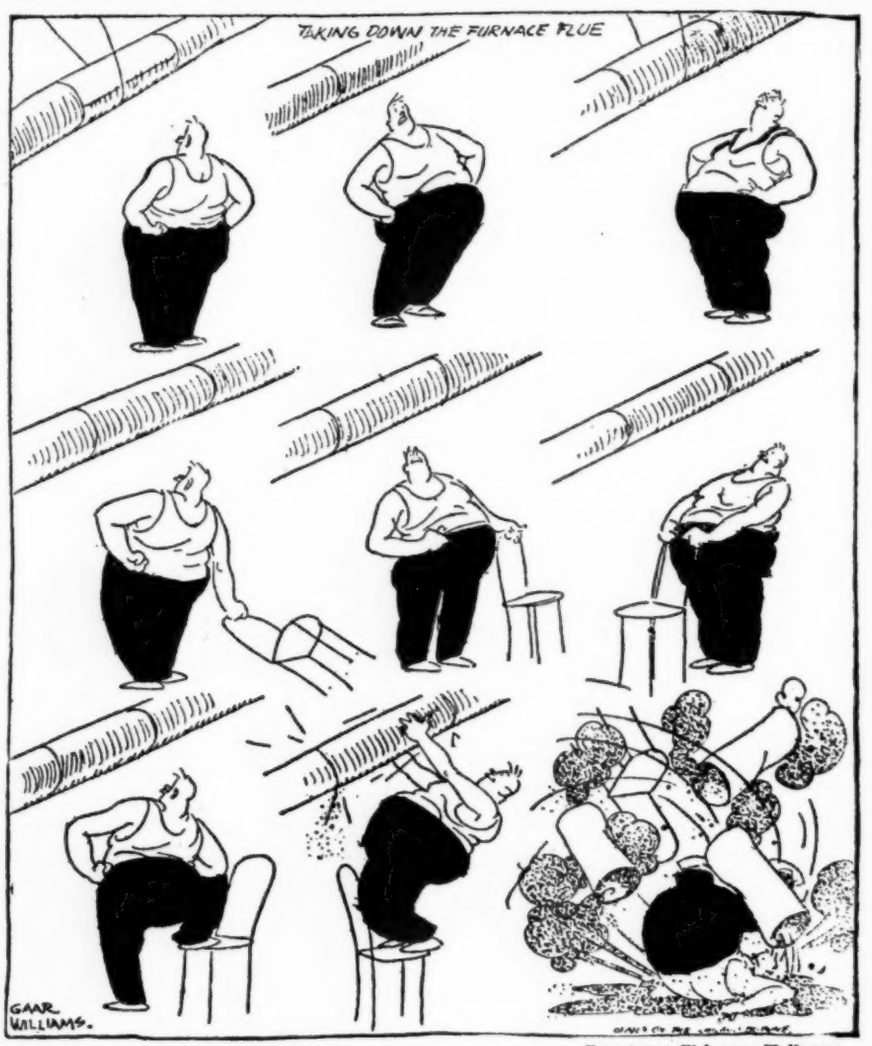
* * *

"Vic" Cook, of the Detroit sales office of the American Rolling Mill Company, is a bachelor and says that one of the reasons is the high cost of frequent change of fashions for women.

He told the following at the Michigan Outing:

She was trying to reason with the poor boob on the day the monthly bills came in.

HOUSEHOLD EXERCISE—XII.



Courtesy Chicago Tribune.

"You see, I simply *had* to have all these new things. Everything's Egyptian now that they've dug up Tutankhamen, and—"

"Yeah?" growled the brute. "Well, all I gotta say is, I hope they dig up Adam next—that's all I gotta say."

Joint Committee on Standardization Holds Progressive Meeting in Sherman House, Chicago, July 10.

Debate Confined to Standardization of Registers and Furnace Fittings—Indications Are that Work of Standardization Will Be Carried Through Successfully.

A MEETING of the Joint Standardization Committee of the National Sheet Metal Contractors' Association, the National Warm Air Heating & Ventilating Association and the Western Warm Air Furnace and Supply Association was held in the Sherman House, Chicago, July 10, 1923.

The debate concerned only the standardization of registers and furnace fittings.

D. E. Cummings, of the Thatcher Furnace Company, Chicago, was Acting Secretary and his report of the proceedings is as follows:

Proceedings of Joint Standardization Committee:

The meeting was called to order by Chairman R. W. Menk, who presided. The roll call was as follows: R. W. Menk and A. W. Glessner, Excelsior Steel Furnace Company, Chicago; W. P. Laffin, Tuttle & Bailey Manufacturing Company, New York; Roy T. Wasson, Lennox Furnace Company, Marshalltown, Iowa; R. W. Blanchard, Hart & Cooley Company, Incorporated, New Britain, Connecticut; Henry F. Droegkamp, John Droegkamp Company, Milwaukee; A. P. Lamneck, W. E. Lamneck Company, Columbus; Paul L. Biersach, Consolidated Sheet Metal Works, Milwaukee; J. Harvey Manny, Manny Heating Supply Company, Chicago; Blair Quick, Quick Furnace Supply Company, Des Moines; George Harms, F. Meyer & Brother Company, Peoria, Illinois; H. W. Symonds, Symonds Register Company, St. Louis; F. L. Nesbit, Standard Furnace & Supply Company, Omaha; P. A. Johnson, Charles Johnson Hardware Company, Peoria, Illinois; Howard Robinson and A. E. Bedau, Robinson Furnace Company, Chicago; D. E. Cummings, Thatcher Furnace Company, Chicago; H. L. Jackson, Meyer Furnace & Supply Company, Milwaukee.

R. W. Menk, J. H. Manny, D. E. Cummings, Blair Quick, A. P. Lamneck, George Harms, H. L. Jackson and F. L. Nesbit represented the Western Warm Air Furnace & Supply Association; George Harms, A. P. Lamneck and A. W. Glessner the furnace fitting manufacturers; George Harms, A. P. Lamneck and John Droegkamp, the National Association of Sheet Metal Contractors.

R. W. MENK, of the Excelsior Steel Furnace Company, Chicago, and Chairman of the Joint Committee on Standardization of the National Sheet Metal Contractors Association, the National Warm Air Heating and Ventilating Association, and the Western Warm Air Furnace and Supply Association, presided at the meeting of this committee held in the Sherman House,, Chicago, July 10.

The debate covered only the standardization of registers and furnace fittings, and from a study of the accompanying report of the meeting by Acting Secretary D. E. Cummings, of the Thatcher Furnace Company, Chicago, it will be seen that considerable progress was made by the committee along this line, which will not only tend to reduce the number of sizes necessary to carry in stock but also to standardize these sizes.

Letters and telegrams from the following persons were read, all of which indicated great interest in the Standardization work and promised loyal support:

O. A. Jones, United States Register Company; Allen W. Williams, National Warm Air Heating & Ventilating Association; Prof. J. D. Hoffman, Purdue University; E. C. Fox, Independent Register & Manufacturing Company; L. J. Mueller, L. J. Mueller Furnace Company; S. Percival, Green Foundry and Furnace Company.

Mr. Harms outlined the work of the Western committee while at the St. Louis National Convention and suggested that the joint committee continue from that point.

A motion was made by Mr. Harms and seconded by Mr. Lamneck that register box openings should be at least of equal capacity to the leader pipe.

The motion carried.

In the discussion which followed, Mr. Lamneck and Mr. Harms submitted sample fittings, supporting their argument, and Mr. Nesbit cited paragraphs from the Omaha ordinance as an example.

A motion was made by Mr. Manny and seconded by Mr. Glessner that 8x10-inch registers have a throat of 6⅛x10⅝-inch outside measurements, with 2¼-inch base extension.

The motion was carried.

A motion was made by Mr. Lamneck and seconded by Mr. Glessner that 9x12-inch registers have a throat 6⅛x12⅝-inch outside measurements, with 2¼-inch base extension.

This motion carried.

A motion was made by Mr. Manny and seconded by Mr. Lamneck that 10-inch leader pipes should have 10x13-inch register, with a throat opening 6⅝x13⅝-inch outside measurements and 2¾-inch base extension.

The motion carried.

A motion was made by Mr. Harms and seconded by Mr. Lamneck that 12-inch leader pipes should have 12x14-inch register and box, with throat opening of 8⅝x 14⅝-inch outside measurements, 4¾-inch base extension.

This motion carried.

A motion was made by Mr. Lamneck and seconded by Mr. Nesbit that 14-inch pipes should have 16x 14-inch registers, with a throat of

11⅝x14⅝-inch outside dimensions and a base extension of 8 inches.

This motion also carried.

A motion made by Mr. Manny to adjourn until 1:30, was seconded by Mr. Wasson and carried.

Afternoon Session.

Chairman Menk called the afternoon session to order at 1:30, with nearly all of the committee members present.

A motion was made by Mr. Nesbit and seconded by Mr. Manny that registers with same base extension be used in corresponding sizes for both first and second floor. This motion carried.

A motion was made by Mr. Nesbit and seconded by Mr. Lamneck that double head fittings carry the following size registers and pipe collars: 8x10-inch—9-inch; 9x12-inch — 10-inch; 10x13-inch — 12-inch; 12x14-inch—14-inch.

This motion carried.

A motion was made by Mr. Glessner and seconded by Mr. Johnson that an additional register size known as the 11x13-inch be made for 12-inch pipes use, to be optional for installations where a 10-inch leader is too small and a 12-inch pipe too large for the room requirements. This motion was carried.

A motion was made by Mr. Harms and seconded by Mr. Johnson that furnace pipe manufacturers make only one size boot collar for the various box sizes according to following schedule: 8x10-inch—8-inch; 9x12-inch—9-inch— 10x12-inch — 10-inch; 12x14-inch — 12-inch; 14x16-inch—14-inch; 16x20-inch—16-inch.

This motion carried.

A motion was made by Mr. Harms and seconded by Mr. Nesbit that the following floor register sizes be adopted as standard: 8-inch pipe —8x10-inch register; 9-inch pipe—9x12-inch register; 10-inch pipe—10x12-inch register; 12-inch pipe—12x14-inch register; 14-inch pipe—14x16-inch register; 16-inch pipe—16x20-inch register.

The motion carried.

A motion was made by Mr. Manny and seconded by Mr. Harms that a copy of proceedings be forwarded to all register and pipe manufacturers for approval and acceptance, also that representatives from each firm be invited to the next meeting which will be held with the Register Manufacturers at New York City Tuesday, September 4, at the Waldorf-Astoria Hotel.

This motion carried.

A motion was made by Mr. Harms and seconded by Mr. Lamneck that Mr. Menk be appointed chairman of the New York meeting. This motion carried.

These resolutions concluded the active business of the meeting, but were followed by general discussion which was entered into by George Harms, H. W. Symonds, Howard Robinson, J. H. Manny, R. W. Blanchard. H. W. Symonds stated that in the event the standard sizes were adopted, he for one, would be willing to change his dies immediately to the various sizes recommended. Mr. Symonds' statement was warmly applauded, as it was an indication of his sincerity and co-operation.

George Harms stated that this standardization work was as important as the Code work, which was adopted some time ago by all of the various associations, and that he was greatly interested in following through the committee work to a conclusion.

There also was some discussion started regarding Standard Estimate blanks and operation cards, but this was deferred by the chairman until the next meeting of the Western Association.

After all had promised to attend the New York meeting if they possibly could, Mr. Nesbit presented a motion to adjourn.

In recording events of this meeting it will be noted considerable progress was made on standardization of registers and fittings, also that the meeting was an exceptionally enthusiastic one, and there is every indication that the work will be carried through to a successful conclusion.

Price Changes Have Occurred on Floor Registers and Borders.

As announced on page 65 of our issue of June 30, the price of Floor Registers and Borders has been changed, effective July 2, 1923. See page 42 of this issue for these changes.

W. E. Nesbit Asks: "Shall There Be a Salesmen's Auxiliary in Nebraska?"

W. E. Nesbit, Vice-President of the Standard Furnace and Supply Company, Omaha, Nebraska, has been asked to call a meeting of the representatives of the Jobbers, Manufacturers and Distributors of sheet metal goods and kindred lines in Nebraska, in order to ascertain whether or not an organization could be formed to be known as the Salesmen's Auxiliary of the Sheet Metal Contractors' Association of Nebraska.

Mr. Nesbit's letter in part, to AMERICAN ARTISAN regarding the subject is as follows:

"Such an organization is in existence in nearly every state in which there is a Sheet Metal Contractors' Association, and the two organizations have always served each other with mutual advantage and profit.

"I should appreciate a letter from you outlining your views relative to forming such an organization, and whether you would be willing to hold a membership therein.

"A meeting of the Sheet Metal Contractors' Association of Nebraska will probably be held in Grand Island on July 24, and I believe that any tentative organization of the Salesmen's Auxiliary should be made at that time."

"Yours very truly,

"W. E. NESBIT,

"Vice-President Standard Furnace & Supply Company."

At the bottom of Mr. Nesbit's

Some men boast they can't be fooled twice in the same way, but there are a lot of other ways.

letter there appear three questions which are undoubtedly addressed to those in the trade who would be eligible to membership in the proposed organization. The questions are as follows:

"Do you favor the organizing of a Salesmen's Auxiliary of the Sheet Metal Contractors' Association of Nebraska?

"Would you take membership in such an organization if the latter is formed?

"Would you or a representative of your firm go to Grand Island for the purpose of helping to form such an organization?"

The question is open for discussion and it is up to you Nebraskans to express your views.

Zideck Says Distant Room Problem Is a Real Problem for Gravity System Air Heating Men to Solve.

Thinks Solution of This Difficulty Will Do Away with Most Weighty Argument Against Furnace—Fans Not the Solution.

Written Especially for AMERICAN ARTISAN AND HARDWARE RECORD by E. E. Zideck, Instructor in Charge of Sheet Metal Work and Allied Trades at the Lincoln Institute, New York City.

IN OUR issue for June 9, 1923, pages 16 and 17, we published the sixth of a series of articles dealing with the solution of problems encountered in connection with furnaces. These articles are written by E. E. Zideck, and this, the seventh of the series, deals with the possibility of long and level pipes heating badly.

Article VII.

Reiterating, the troubles encountered sooner or later in almost any of the older installations are the following:

1. Smoke and dust in rooms.
2. Poor draft, due to defective furnace.
3. Fire going out before refeeding time.
4. Furnace overheating the basement.
5. Diminished heating results.
6. Little heat out of much fuel used.
7. Long and level pipes heating badly.

The above defects were fully discussed in the preceding six articles of this series. It was shown that the system itself is not at fault, but that the furnace maker and the installer are about equally to blame for the shortcomings of, and the troubles in connection with, the installed furnaces which discredit the system among the general public.

First, smoke and dust can not enter the living rooms if the firing apparatus, the casing and the ducts are *tight*. Both the furnace and the sheet metal parts must be tight. The one, if not tight, will discharge smoke and ashes into the casing; the other, if not air tight throughout, will *suck in* smoke and dust from the cellar.

The *leaky* furnace, it was shown, either has been set up carelessly, or the *overheating* of it has burned and deranged its parts. And it was shown in connection that the overheating of a furnace is not a *natural* thing to happen, but that it is due to *insufficient, inadequate and variously obstructed air passage around the firing apparatus.*

Secondly, more poor draft is caused by the furnace leaking than by the too often blamed chimney. The leaky furnace, as explained, is not a natural condition. It is caused by careless setting or by overheating, which, in turn, is due to not enough air passing through the casing.

The same cause which makes the furnace carry smoke and dust into the rooms also diminishes chimney draft and is responsible for poor firing and non-combustion of fuel.

Third, the fire-going-out trouble again has its source in the leaky furnace. And a furnace can not be leaky unless it was set up that way or its parts became deranged. The furnace set up on a poor foundation will settle to one side after firing in it, and this certainly would loosen up the joints and make them leaky; but mostly, the derangement of parts is due to *heat* not carried away as quickly as it is produced.

Fourth, the hot basement is a direct result of the above referred to inability of the heat to move as rapidly as the fire imparts it. It can not move unless carried by the air, and if the casing admits of little air passing through it; or, there are insufficient and obstructed air carriers to and from the casing; the heat is *forced* to remain around the firing apparatus and penetrate through the casing into the cellar.

The heated casing and other sheet metal parts act as a stove placed in the cellar would. The cellar air gets heated by it.

Fifth, there will be *less* or *no heat* above in the rooms if there is little or no *air* carrying it there.

The fuel burning within the furnace produces a certain amount of heat particles which, in a properly designed system, impart themselves to those metal parts of the furnace facing the air chamber (casing).

If there is sufficient amount of air in the chamber to *absorb* the heat, and a sufficient air passage for the heated air *to move upwards,* the metal will impart the heat to moving air as quickly as it receives it. But if the air passage is limited or obstructed, the heat will remain largely in the metal, burning it; and within the casing, which it penetrates and heats up the cellar. And, naturally, the heat retained in the metal, within the casing and in the cellar will be *missed* in the rooms.

Diminished heating results may also be due to soot and ashes piled up in and covering up the interior of the furnace and its heat passages.

Sixth, poor heating results may be due to a crust of soot coating the inside of the furnace metal. This *crust* acts as an insulator and pre-

vents the heat particles entering the metal.

Poor results from continuous and much firing of fuel into the furnace usually are obtained if:

(a) the *soot crust* coating or piled up ashes hinder heat penetration;

(b) a leaky and deranged furnace permits of a continuous *direct draft;* and,

(c) poor air travels through the casing and the pipes, in which case the heat is retained in the cellar.

Seventh, the arrangement of pipes, short and long, upright and level ones, all from the top or from an equal height upon the hood causes the heat to travel at *an increased speed,* through the shortest and the most vertical of channels, and there is no heat *left* for the long and level pipes to carry.

The *hottest* air pushes upward. It is the *easiest* route for it. Once it has found this route, it will push along it at as much speed as it is discharged by the furnace.

None of the above troubles and defects is inherent in the system. And none is there which can not be remedied and done away with entirely.

Number 1 is due to *leaks* in the furnace or the sheet metal parts. *Stop* the leaks, and there can be no smoke, ashes nor dust coming up from the fire or the coal or the basement doings!

Use the return air or the outside air at will, but do not allow it to *mix* and be diffused with *other* stuff than the *heat,* received from the furnace metal.

Number 2 can easily be ascertained whether it is due to a bad or sooty chimney by disconnecting the smoke pipe from the furnace and trying a *paper-fire* within it. If the paper, loosely inserted, flames up and is drawn in, there is nothing the matter with the chimney. The draft remedy must be accomplished within the furnace itself, and in ninety cases out of a hundred it will be found that the furnace is either *full of soot* or *leaky.* Remove the soot and stop the leaks and there will be plenty draft for the fire.

Number 3 is caused by *leaks* in the furnace. By them, air is drawn in from within the casing, especially so when legitimate draft openings in the doors are shut. Sometimes there are *leaks* around the doors, checks, water pipes, and badly fitting parts of the furnace front. Stop these leaks and the furnace will retain fire as long as any other apparatus is expected to do.

Number 4 relates to the *furnace overheating* and causing a hot basement. It can be due to either a too small casing or insufficient movement of air through it.

In many instances the casing appears large, of adequate capacity for the amount of air led into it, and still, if one measures and discounts the space taken up by the doors, the smoke outlet, the water pan, the cleanouts and other obstructions, *the space for air to rise within the casing* will be found to be cut to a minimum.

It is *not* the amount of air the casing *holds* that counts. What counts is the amount of air that can unobstructedly *move through it.*

It is *this* amount which should equal the amount of air, in cubic feet or inches, required in the various rooms.

Too much stress is being laid upon *figuring* room contents and exposure and the *sizes* of pipes purported to *carry* the required amounts of air, but no attention is directed to the fact that, if the casing is too small, admitting of only *one-half* or less the required air to pass through it, all the large size pipes and ducts minutely figured out will do no good.

Irrespective of what the rooms and their various exposures call for, only *that amount* of air can be led into and through the pipes which *passes through the casing.*

The overheating furnace which causes the hot cellar, by its very overheating proves that it is capable of heating *more* air than either—

(a) is admitted into the casing;

(b) passes through the casing; or

(c) passes through the pipes.

Ascertain which of the three it is. Either the casing is large enough and it does not receive enough cold air through the supply duct; or the supply is sufficient and the casing passes less; or both the supply and the casing passage are ample and the trouble is in the too small, or too crooked, or otherwise inadequate warm air carriers.

Both, the too small supply and the too small or inadequate pipes, can be remedied easily. Not so the too small casing. Here the rings must be larger, the smoke outlet, cleanouts and other parts extending through the casing made to fit it.

Still, if the furnace overheats on account of the too small casing, it will pay to make the change and get the heat, otherwise lost into the cellar and damaging the firing apparatus, into the rooms where it is wanted.

Numbers 5 and 6, relating to diminished and poor heating results, have been shown to be due to either *soot coating, leaky apparatus* and continuous draft, or to the causes discussed under other numbers.

The remedy consists in taking the furnace wholly apart, scratching off the soot crust and otherwise cleaning the metal, and in setting it up to be *air-tight* in every joint.

If, after that, the furnace overheats (there is a hot casing from the red hot metal within it), the other remedy with the casing should be resorted to.

Seventh, in the gravity system of air heating the heat will go *upward* first and sideways second. And in order to insure the hot air traveling sideways, through the *level* pipes, *all* pipes must be equally level.

In a system having *different* level (and length) pipes, the more *vertical* pipes (and the shortest pipes) will be favored by the heat. It will enter and travel through these *rapidly,* rather than enter and travel through all the channels provided for it, *slower.*

As it is almost impossible to install a system with all pipes on an equal level; and as there is at least one long and level pipe in every installation; the other pipes being shorter and more upright; it is certain that the room or rooms having

the less favored connection will be heated *less*—if at all.

The *distant* room problem is a *real* problem for the gravity system air heating men to solve and do away with the most weighty (because well founded) argument in disfavor of the furnace.

The use of *fans* in connection with the furnace is not a solution of the problem. If we are to use *blowers* to force the air, we might just as well use *radiators* to heat it and discard the furnace altogether.

The furnace system requires the air to travel *automatically*. It must of its own force find its way into the furnace air chamber (casing), and of its own force, when heated, must it travel to where it is wanted.

Its travel, both ways, must be *facilitated* by whatever *non-mechanical* means there are available. Other means, such as fans and blowers would make of it *another* system.

That the *gravity* system works is best exemplified by the *pipeless* furnace. In this apparatus the air travel, both ways, has a push and a force far greater than is required of it. And we need only to apply the single-pipe principle to the multiple pipe system to obtain satisfactory results from the long and level pipe connection.

Accordingly, *each pipe* should have its own *air chamber* at the furnace to draw its quota of heated air from it. If the air chambers are separate and tight, the air entering them from below can rise, when heated, in *one* direction and through *one* pipe only.

In remedying the *distant room* trouble in already existing installations the above principle has been applied, partially at least, by building compartments into the *hood*, each compartment being as large as required by the size of the pipe which it fed.

By building these compartments low enough to permit of no air going from one side of the casing to the other and escaping through the shorter pipes, the compartments feeding the long pipes leading into distant rooms were receiving their quota of air from the casing and passing it on just as readily as the other compartments did through the shorter runs.

(*To be continued*)

Nothing Like Having Your Friends Rooting for You.

Comes the following letter in appreciation of our work from J. J. Daugherty, Warm Air Heating and Ventilating, 628 Main Street, Hamilton, Ohio:

To American Artisan:

You will please find herewith our check to cover another year's subscription. We find American Artisan the best investment of two dollars that can be obtained anywhere.

Sincerely yours,
Robert J. Daugherty.

Instructive Catalogue No. 4 Out, Containing Valuable Information on Simplified Furnace Fittings.

Containing as it does a ground plan and a photograph of the new 4-story Lamneck plant, which the company says contains 130,000 square feet of floor space, the catalogue No. 4 on Simplified Furnace Fittings of the W. E. Lamneck Company, Columbus, Ohio, is exceptionally interesting and attractive.

The catalogue is 5¼x10 inches and contains 98 pages, exclusive of the covers. It is highly descriptive and contains about everything anyone would want to know about warm air furnace fittings, such as pipe, registers, boots, etc., together with extensive price lists. Considerable space is also given to the Double Wall Non-Vented Safety Pipe, together with wall stock angles and elbows, and double tees and reducers.

More extensive information can be had by writing the W. E. Lamneck Company, Columbus, Ohio.

One thing a man can't understand is why his enemies have so many friends.

Reminding Bill That He Has a Furnace Needing Attention in His Basement.

The accompanying advertisement is a reprint from the Aurora, Illinois, *Beacon-News* and is an appeal for furnace repair work, etc.

That Mr. Stowell recognizes the necessity of impressing upon the mind of the public the requisite for doing good work is evident from the heading of the ad. Unless people are constantly told where they can obtain high-class work and service at a reasonable price, and reminded of the utility value of having their furnace repair work done at a certain time, they are prone to let it slide by until they need the furnace again; then they wake up and find that other people have also procrastinated and as a consequence the furnace repair man is hard pushed with rush orders when cold weather comes on.

This ad is a very good gentle reminder that there is a furnace in the basement which may or may not need attention, and that Jack Stowell is the man to see about it.

It takes good, strong, persistent effort to overcome the human inertia, and Mr. Stowell is on the right track to do this.

Don't delude yourself by thinking you are deluding your employer if he does not constantly call your attention to your business faults.

Gunton Says That with So Many Installers Disagreeing, a Pipeless Job Will Not Do.

So He Offers Plan for Pipe Installation Which He Claims Is in Accord with Standard Code.

WHEN doctors disagree, it is time to make arrangements with the undertaker, is an old saying, but it does not exactly apply in the case of that interesting pipeless furnace problem presented by George W. Turton, for in each case a feasible solution has been furnished by the many installers who have contributed to this discussion.

However, W. Gunton, Heating Engineer of R. J. Schwab & Sons Company, thinks that after all that has been said and shown, the best solution is to discard the pipeless proposition altogether and install a real pipe job, as per the following letter and accompanying illustration:

To AMERICAN ARTISAN:

We have been very much interested in the articles on the problem of George W. Turton's pipeless job, as published in your magazine at different times during the past six months, and we are of the opinion that since it is impossible for the high class heating men, who have been commenting on this job, to agree, there must be something wrong with a pipeless system for this type of building.

As it will soon be time when it will be necessary to have heat in this building, I would suggest that we abandon the pipeless system and that we heat the job with a pipe system, believing that we will have less trouble in agreeing on a satisfactory layout.

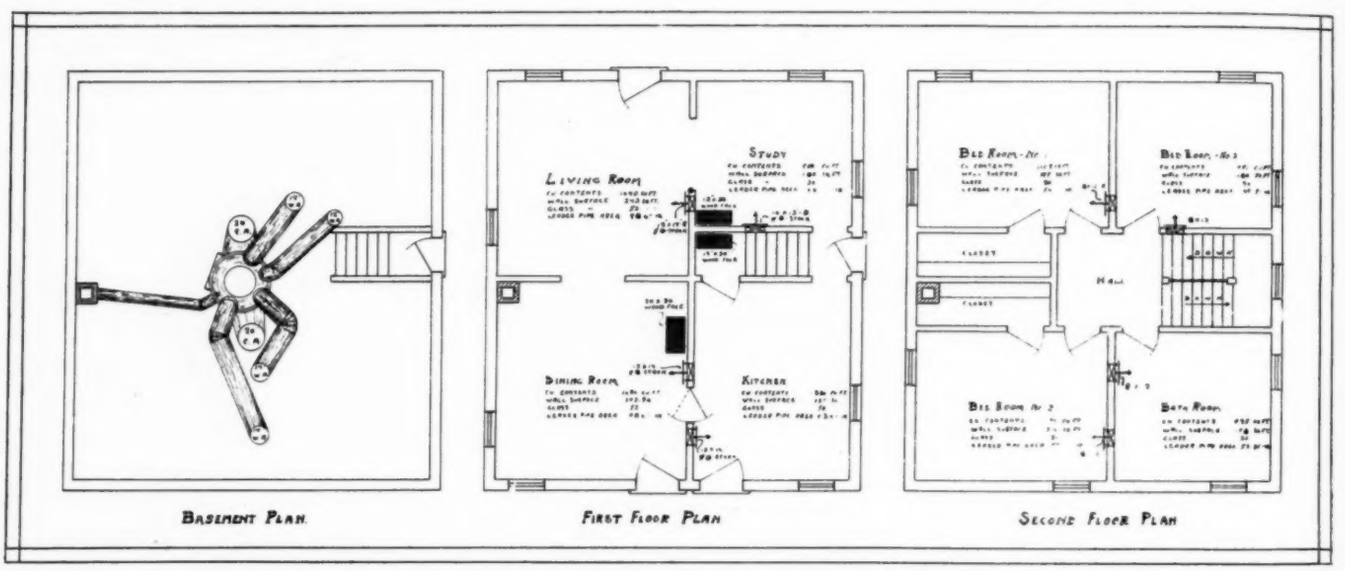
We are offering a sketch showing a layout for a pipe system, the registers and leader pipe area being figured according to the code adopted by the National Warm Air Heating and Ventilating Association, as well as several other Associations. Notations of measurement are shown in each room.

This layout shows a double heating system. That is, a room on the second floor being heated in connection with one on the first floor. The register box and boot on first floor, also the leader pipe being of sufficient size to heat both rooms. With this method of heating there are less pipes in the basement, also less friction and cooling surface.

According to this layout, the total leader pipe area for this job is 575 square inches; the total area of cold air being 600 square inches, and we recommend for this job a No. 537 Gilt Edge furnace having a rating of leader pipe area of 600 square inches.

Yours very truly,

W. GUNTON,
Engineering Department.
R. J. SCHWAB & SONS COMPANY.



W. Gunton Shows How He Would Heat George W. Turton's House.

Rural Free Delivery a Help to Create New Business.

Many of the small-town merchants who suffer severely from mail order competition could do considerably more business if, instead of sitting back and bewailing their fate, they got busy and fought fire with fire. This assertion was made recently by an authority on merchandising methods, who went on to say that the postal system of the United States is the finest ally any small-town merchant could ask. Every merchant who is a citizen, this authority said, has the right to be supplied by the postmaster of his place with the number of mail boxes on each R. F. D. route running out of it. The postmaster is not required to supply the names of the persons living along those routes, but he is required to deliver all letters addressed, for example, "Box 1, Route 3." With the farmer's predilection for reading everything that comes to him, there is little reason why merchants in these places should fail to get their sales messages across as easily as the big mail order houses do.

Warm Air Furnace Installer Takes Advantage of Available Advertising Space Where His Furnaces Are Being Installed.

Aids Installer in Keeping Name of Furnace Before Public by Supplying Him with Signs to Be Placed upon Buildings Under Construction.

AS YOU know, the consensus of opinion among merchants and advertisers generally is that the billboard, strategically placed along a well-traveled thoroughfare, is one of the best forms of advertising, for the reason that it is read repeatedly by pedestrians and those who travel in vehicles of any kind.

The supremacy of this form of advertising over other forms is proved by the fact that everyone wishing to advertise and having a vacant space available does it.

What does the sign "Post no bills" on all telegraph poles, etc., mean if not that display space of this sort is at a premium?

Accordingly there has sprung up among manufacturers and builders the practice of placing a sign on a building under construction to the effect that "this building is being equipped with a particular make of furnace or boiler," etc. This form of advertising is very good, because at no time or place where the firm name or the furnace name appears does it receive as highly concentrated attention as when it is on the building under construction. Here the sign is removed from all possible distractions; it has no other advertising matter with which it must compete. Therefore, each person who sees it reads it with undivided attention.

This mode of advertising is usually done by the manufacturer through the installer. The accompanying reprint of an advertisement of this type furnished by the Utica Heater Company, Utica, New York. The firm has a series of four of these signs which are constructed of a heavy paper and are held in position by cleats or tacks around the edges.

In addition to the good features mentioned of this form of advertising, there is one other and perhaps the most important of all; it opens the way for decisive action on the part of the prospective customer. The man interested in furnaces sees the sign and he immediately makes a mental note of it for future reference. When the building is completed, he goes to it and inspects the system in action and draws his own conclusions. There is no disputing a system that is turning out satisfactory results. Then, too, after the system has been tried out under certain cold weather conditions he can make a second inspection, getting from the owner a statement of fact regarding the system. If the owner is pleased, which he is bound to be with a system constructed on scientific principles, his recommendation is worth more to the prospect than almost anything else. Why? Because the man owns one, has tried it out and found it to be all that it was said to be by the installer. Having tried the system, the owner has figures on its cost of operation, the service he gets from the installer together with the frequency and cost of repairs.

The posters in question are about 20x40 inches over all and the predominating color is generally red or yellow. There are instances where the lettering is white on a black background with large letters, and yellow letters on a black background for the small lettering. However, a combination of red and yellow generally predominates.

The letters are large enough so that they can be easily read from the street and only sufficient in number to give the reader an intelligent understanding of what it's all about and to arouse interest.

Illustration Shows How Installers May Make Use of a Highly Concentrated Form of Advertising. The Original of This Illustration Is 20x40 Inches, in Colors Which Attract Attention Quickly.

Wage Increases Are Not Unmixed Blessings.

The recent wage increases are being viewed in two different ways. According to the optimistic business observer they point to enormous buying power and thus foreshadow excellent trade conditions in the fall.

The dissenters from this view, however, see in these high wages the necessity of higher prices. The wage-earner, they maintain, may be able to pay the higher price, but other groups of producers, and especially the farming population, will not be able to do so. They are firm in their opinion, therefore, that some sort of readjustment is necessary if our prosperity is to last.

The Design of Furnace Canopies Can Be Varied Considerably, Often Inclining the Branches and Making the Top of The Hood Concave.

Pattern Shows Hood Has a Straight Ridge on the Bottom. Concave Top Permits Filling With Sand.

Written Especially for AMERICAN ARTISAN AND HARDWARE RECORD by O. W. Kothe, Principal, St. Louis Technical Institute, St. Louis, Missouri.

FURNACE canopies can be made in quite a number of different designs, of which the one we here show, has been suggested, where only two pipes are to lead off from it, possibly in trunk lines. Observe in the plan of the elevation how the branches incline and how the top of the hood is concaved, in order to enable filling it with sand as a-A-B. The hood has a straight ridge on the bottom, which helps in the developing. First, draw the elevation, making the inverted cover to its desired pitch, and then adding the rectangular pipes, placing them at their desired inclination. This enables finishing the elevation.

After this we develop lines into the plan and treat part of it as a square to round and the other part as a hood off center. Triangulation must be used throughout the development. So, when the outline of plan is drawn, divide the distance from 1 to 8 into any number of equal spaces and draw lines to the points A and B.

Next, divide the distance, a-8, in equal spaces and draw lines to the corner D. Observe this latter can be developed the same as a square to round. We now develop the true lengths by extending a line from A-B to T-7 and we let from the heights represent the distances H″, H′ and H. On these altitudes we develop the pattern "M." So from plan pick the lines from B-1-2-3-4, etc., to 7 and set as T-1-2-3, etc., to 7. Then pick the lines A-7 and A-8 and also set on this line, as T-7′ and T-8. Now to add the two inside pieces for the branch, we pick the line 8-E from plan and set as H-E in diagram and draw lines to H″. Next, we pick line A-E and we set as T-A and draw line to H″. Then pick F-a from the plan and set as H-a and draw lines to H″. This gives all the true lengths necessary in developing the pattern "M."

Now, on the other side of elevation we develop the true lengths for the outside parts of the branch, as in pattern "N." So, we pick the distances as D-a-b-c, etc., and set them off on a line p-a-b-c, etc. We next draw to the height h and we have those true lengths. Observe the space t-e is the same as 8-e and is already in the right hand diagram.

To set out the pattern "M," draw any line as A-B and set one pair of dividers to one of the spaces in the plan as 6-7, set another pair of dividers equal to two lengths H″-7 and H″-7′ and, using A and B as centers, strike and cross arcs in point 7. Then strike small arcs 6 and 8 and cross these with true length H-6 and H-8. Then repeat this method until B-1 is established. To add the sides of pipes, set dividers true length H″-E and, using H in pattern as center, strike an arc, as at E. Next pick true length A-H″ and, using A in pattern as center, cross arcs in point E. Next pick the plan line E-F and, using E in pattern as center, strike arcs, as at F. Then pick the line A-E from elevation and from A cross arcs in point X. Next pick the line D-E from elevation and, using F as center, strike an arc, as at C. Next pick the line a-H″ from diagram and strike an arc, as at "a" in the pattern. Also pick the line A-D from elevation and, using A in pattern as center, cross arcs in point C. Now pick line D-a in elevation and, using C in pattern as center, cross arcs in point a. This will enable you to draw lines through all points where arcs cross and this much of the pattern is finished.

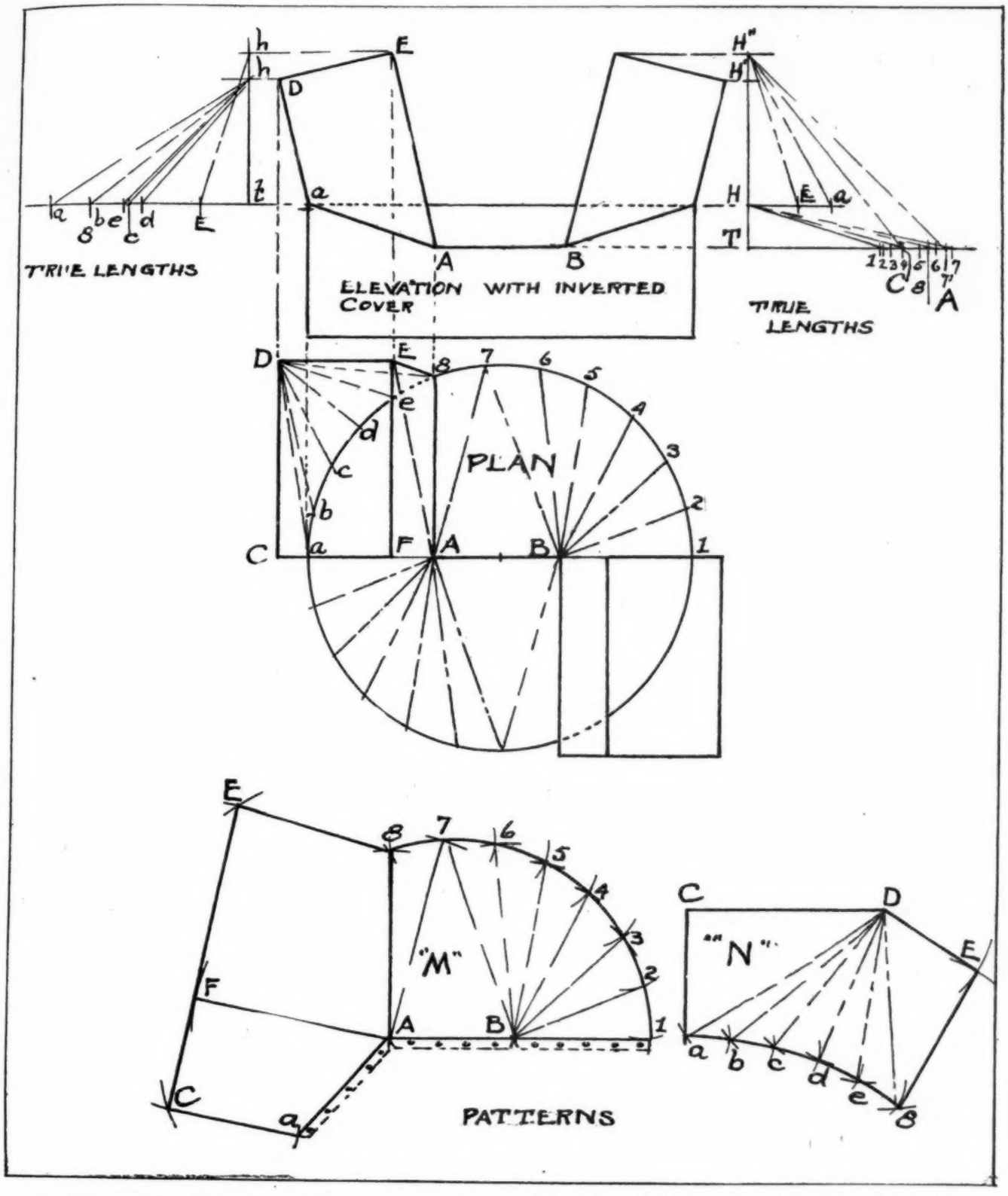
The pattern for the balance of the pipe is laid out the same as any square to round transition piece, as "N" and hardly needs any further comment.

See opposite page for working drawing referred to in this article.

United Sheet Metal Contractors to Meet at Hardware Club July 26.

The United Sheet Metal Contractors of Chicago will hold a meeting Thursday, 8 p. m., July 26, in the Hardware Club rooms, State and Lake Building, Chicago.

Important matters will be taken up at this meeting and it behooves every member to be present.



Working Drawing Shows How a Furnace Canopy Can Be Made Where Only Two Pipes Are to Lead From It.

Michigan Sheet Metal Men Plan for Week's Boat Trip as 1924 Summer Outing.

In spite of the fact that the 1923 Outing of the Michigan Sheet Metal and Roofing Contractors' Association has just passed into history—and incidentally, it was by far the most successful one in the history of the Association—plans are already being made for the 1924 Outing which is to be in the form of a week's boat trip on Lake Erie, Lake Ontario and the St. Lawrence River, with stops at Buffalo, Niagara Falls, Toronto, Montreal and Quebec.

The cost will not exceed $100.00 per person, and this includes, Secretary F. E. Ederle states, all necessary expenses except breakfast, this rate being based on two people occupying a double berth on the boat

and a double room in hotels.

The trip will be made during the last week of July, 1924.

Secretary Ederle further states that members may start paying installments on the $100.00 now, with the understanding that if for any reason a member may not be able to go, whatever he has paid in will be returned to him.

Reservations should be mailed to F. E. Ederle, 1121 Franklin Street, Grand Rapids, Michigan.

W. A. Whitney Company to Add Two More Punches to Their Line.

"Arguments with a Punch in Them" is the title of a pamphlet issued by the W. A. Whitney Manufacturing Company, 715 Park Avenue, Rockford, Illinois, describing the Whitney Lever Punch.

The pamphlet is exceedingly descriptive of the article offered, showing the punch in all of its various positions.

The company states that these punches save moving the jobs to the shop, as they can be used anywhere with or without a vise.

They also state that they are equipping their plant to enable them to add two more new punches to their line.

For further information write to the W. A. Whitney Manufacturing Company, 715 Park Avenue, Rockford, Illinois.

Whitman Wants to Know How to Stop Extraordinary Noise in His Sheet Metal Shop.

Here is a chance for some of you sheet metal men to help out a brother who needs a bit of advice. He says that there is some condition in his shop which causes an unusual amount of noise whenever work is going on.

C. M. Whitman, ————, Oklahoma, one of our subscribers, writes as follows:

To AMERICAN ARTISAN:

We have just moved into our new, brick and stone building and have a very fine sheet metal shop. The room is 25 by 84 feet, with a ceiling of 14 feet, well lighted with four skylights, 4 by 8 feet, and a ventilator at each end. The floor is first class cement, smooth as a drum. There is a large steel plate sunk in the cement, level with the floor.

We have a single door front entrance and a sliding door for the driveway in the rear, so that our truck can be driven into the shop for loading and unloading.

Forty-four feet from the back, is the real shop. There is a partition with an opening, 8 by 14 feet, to let the air circulate through the building.

In the rear wall we have metal window on a center pivot, light coming through a glass surface of 7 by 22 feet.

What I want to know is how to stop the vibration of sound which is so loud that you cannot hear yourself talk in the front part when work is going on in the shop.

If any of your readers know how to deaden this noise, I would surely like to hear from them.

I appreciate AMERICAN ARTISAN very much. It is the first of the trade papers I take to tell me if prices are up or down, and I buy my goods according to its price quotations.

Yours truly,
C. M. WHITMAN.

————, Oklahoma, July 2, 1923.

Offices of Durex Chemical Corporation Are Moved to 160 Front Street, New York City.

The offices of the Durex Chemical Corporation, manufacturers of Barium Products, have been moved to 160 Front Street, New York City.

It is also announced that at the recent election of officers the following were chosen:

President—Edgar Palmer.
Vice-President—A. P. Cobb.
Secretary—Albert B. Schultz.
Treasurer—H. S. Wardner.

E. V. Peters has been appointed General Sales Manager.

C. F. Beatty Appointed Advertising Manager of New Jersey Zinc Company.

E. V. Peters, General Sales Manager of the New Jersey Zinc Company, 160 Front Street, New York City, announces that C. F. Beatty has been appointed Advertising Manager of the Company, effective July 2, 1923, in place of C. A. Stedman, who enters the eastern sales department, handling the sale of products of the Company and its subsidiaries in the New Jersey, Philadelphia, Baltimore and Washington territory, reporting to F. C. Fuller, Manager of Eastern Sales.

Ten Kinks Tersely Told by L. S. Bonbrake.

1. Leaks are often found, caused by the metal flask being too low. Water will seep in from capillary attraction or splash over it.

2. If the smoke stack on a chimney has not the proper draft and has a rain cap on its top end, knock the cap off, it obstructs the draft.

3. A hard cement for an emergency can be made with one part each sand and coal ashes, sifted, two parts flour. It takes longer to harden than most cement.

4. When the draft of a furnace is so strong that the "draft check" will not subdue it, pull out the soot pan in the chimney.

5. Add a cup of vinegar to a gallon of ordinary flour paste, then notice the great improvement in sticking quality.

6. To avoid collapse when "sanding" a flat top furnace dome, punch a small hole in its center, run a wire through, nail to joist above.

7. A quick flip with a long-pronged pair of pliers will quite often a make a fold in roof flashing or gutter that will save a cut, lap and solder.

8. If a valley in the roof leaks, get into the attic and see if the metal has been pressed down between the lath; it may sag down from other causes.

9. In going through a basement wall with steam or furnace pipe, use

a loose collar for the pipe to pass through. Close each end with a ring to fit (as a soot catcher) and save future annoyance.

10. Weatherboarding let down tight upon the flash of an abutting shed roof will hold soot and dirt which, combined with rain water, will form an acid; this acid will turn the metal to a mass of rust. See that siding is kept up from corner of tin flash to brushout and paint.

Gust Krack Knows That It Pays to Advertise Sheet Metal Work and Furnace Installation.

He Has Been in Business in Erie, Pennsylvania, 23 Years, but Still Feels That Everybody Does Not Know Him, Nor What He Does.

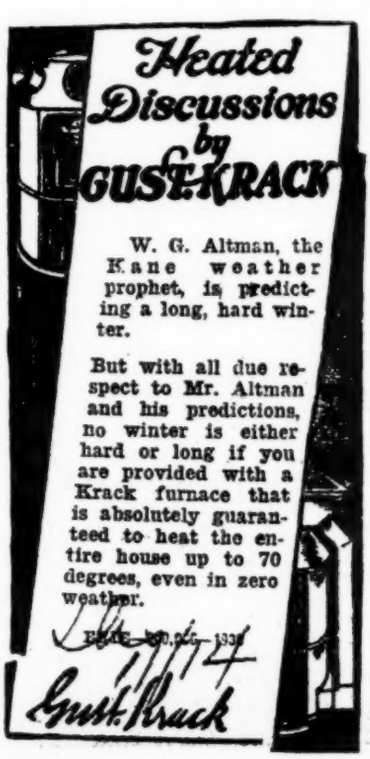
THEORIES may be all right and may work out fine in practice, but the only real proof of a pudding is in the eating thereof.

So when Gust Krack tells you that advertising is profitable for sheet metal and furnace contractors, what he has to say is of real importance, because he is talking from experience—he *knows* that advertising brought his furnace business up from less than one hundred and fifty in one year, before 1920, to over four hundred in 1922, and this year he will exceed that number by another hundred.

Mr. Krack told of his experience during the recent sheet metal convention in St. Louis, and illustrated his remarks by stereopticon reproductions of some of his advertisements. These advertisements were all of one size—1 column wide and four inches deep—and a different one was used every day during the whole year.

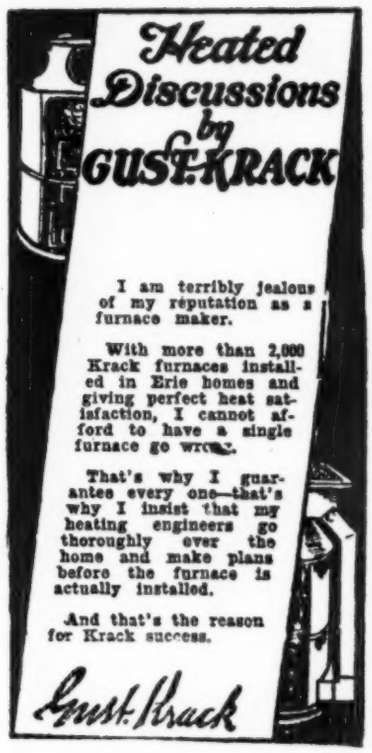
Here is what Mr. Krack said:

My experience in advertising sheet metal work, roofing and furnaces has been about the same as



the average merchant, with the ups and downs—failures and successes—but I am thoroughly convinced that a consistent, persistent use of small space in the daily papers brings the best results.

My idea is not to run a splash advertisement asking people to drop the newspaper — run to the telephone—call Gust. Krack & Son—and say "Send me out a Krack furnace at once."



I know this cannot be done.

All the advertising in the world would not induce a man to take headache tablets if he does not have a headache, therefore all the advertising you could write will not tempt a man to buy a roof or furnace if he does not need one.

By consistently giving some interesting data on roofs and furnaces, telling our policy and of the service we render to our customers, coupled

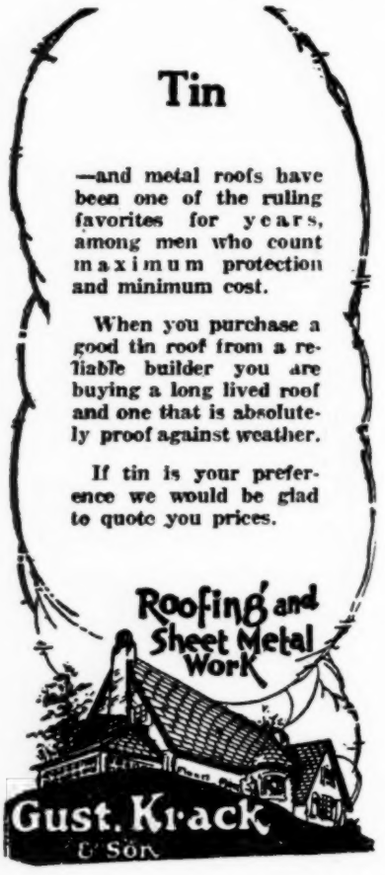
with a strong display of our firm name, we are getting benefits from our advertising far in excess of the cost to us for the space used.

We must remember that advertising is not an exact science where you measure out so many inches of space and get exactly so many scales, but it has been demonstrated again and again, that if your goods, prices and service are right and you continually, faithfully, tell your story in an attractive manner, that will compel the attention of the readers, and if the message you present is honest, and your statements all correct, you will over a period of time get exactly the results anticipated, and often the results will be larger than you expect.

In these days of strong competition we must use every endeavor to make our service, and merchandise, just a little better than our competitors—and we must make our advertising better, too. This does not mean that we must spend more money for advertising than the other fellow, but it does mean that our advertising must be more attractive, more compelling, and that it must plant some idea or desire in the average reader's mind for our product.

We started in our present campaign last August with the use of quasi-humorous copy — with the idea of getting the readers of the daily newspapers to follow up the series. In this we were successful, and when we had the attention, we gradually turned this into more informative copy, and presented our message in all its different phases.

Our copy is also designed to keep the name of Krack in the front ranks at all times, even if the daily



reader of the newspaper does not read the message, still he sees it and mentally registers "Just another Krack Advertisement."

In this way we will endeavor to make the name Krack a synonym for roofs, or furnaces, so when people think of a roof or a furnace they bring to mind Krack oftener than that of our competitors.

I prepared a few stereopticon views which I will show—they are one column—4″ to 5″ long, and as you will see, the copy is changed every day.

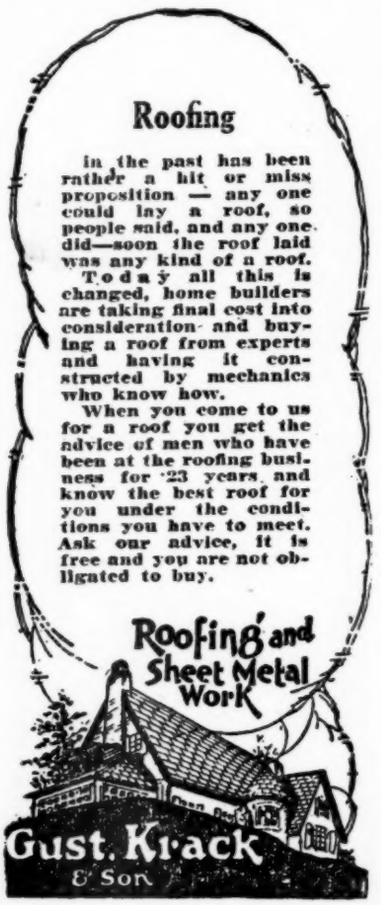
Those shown all appeared in our English paper.

Others were used in our local papers printed in the foreign languages, such as German, Polish and Italian.

Advertising is simply talking to your customer, or possible customer, on paper as you would in person if you could reach them, and as statistics show—½ of the population of America is foreign speaking. For instance, New York City has the largest Jewish population; Chicago the largest Polish population in the world and in my home town, Erie, with 100,000 population, 27% are German, 15% Italians and 20% Polish, which is over 50% of the entire population.

The American knows from infancy the advantage of a modern heated home, but it is our duty to educate the foreign born to our modern way of living.

With this in mind I started to use the foreign language press, as from my own experience I knew that the only way to appeal to these people is through their own language. The majority of the foreign born people



have become distrustful through misrepresentation on the part of some dealers; therefore if an article of good quality is explained to him in his own language, he will be a ready buyer.

I also used theatre programs systematically, and the results obtained from them are very satisfactory. As you noticed by the last picture shown, these ads vary from those appearing in the newspapers. The

nature of the program copy must differ from the newspaper copy: The most important factor in theatre program advertising is not as much the contents, but the attractiveness of the make-up.

Now, in regard to the advertising of some of our larger furnace manufacturers: Some are spending fabulous sums for advertising in periodicals and magazines. While I do not wish to underestimate the value of this magazine advertising of certain articles, I do think that if these Manufacturers would advertise more in our trade journals, which are read by all sheet metal and furnace men, select a competent dealer in each locality, engaged in the *legitimate* business, and then coöperate with him in starting an advertising campaign in his local newspapers, far greater results would be obtained.

I wish to particularly call your attention to the use of the foreign language newspapers. This is a field that has scarcely been touched. We have millions of people in this country speaking a foreign tongue, who are making themselves good citizens of our country. These people are as anxious for the comforts of modern home as any of our own people. To sell them it is necessary to give them some good *educational* advertising in their own language, as they read and believe their mother tongue newspapers almost as implicitly as a Christian reads and believes his Bible.

To Go Into Debt Is Beneficial If You Know How to Go Into Debt, Says Greenberg.

Take Advantage of Credit Facilities in Order That You Will Be Able to Compete with Better Equipped Business Competition.

Written Especially for AMERICAN ARTISAN AND HARDWARE RECORD by J. C. Greenberg, Cleveland, Ohio.

JACK KENNEY was trying to solve a big problem in which his good wife took a hand. Jack, like all ambitious husbands, tried to pull a clever stunt. He wanted to buy an automobile for "family" use, but his wife objected. She was one of those saving souls that always wanted to "have money in the bank," but she carried this idea too far. At any rate, when I came in the argument suddenly stopped. You know how it is when you argue a "family" affair in your place of business. You hate to have anybody know anything about it. The silence was so oppressive that I felt uneasy, so I said to Jack: "I'll be in this afternoon," and smiling to Mrs. Kenney, I remarked; "Just go ahead and argue it out whatever it is. It is best to settle these little family affairs at once rather than have a hang-over and argue all week."

As I turned to leave, Mrs. Kenney said: "I wish you would stay right here. Jack and I are arguing on a matter and I just know that I am right. Jack just has no sense at all, and we would like to have your opinion about our affair."

I'll "tell the world" that I was uneasy. If she put it up to me, it meant that I must either incur the displeasure of Jack or that of his wife. What would you do in a case like that?

Before I could decide what to do, Mrs. Kenney began to talk something like this: "Jack wants to buy an automobile for us just for pleasure. Now, Jack cannot pay cash for it and it means debts. I should rather go without an automobile than have a debt hanging over my head. When we started in business, he was for getting a lot of things that would get us into debt, but I stopped it. Now he has that automobile 'bug' and wants to go into debt for it. I simply must put my foot down on *ANYTHING* that will incur debts of any kind. I wish you would——"

While she was getting enough breath to get another start, Jack took advantage of an opportunity to interrupt her by saying: "I am sure that she is all wrong about this automobile 'stunt.' I am sure that this scheme will give us prestige if nothing else. An automobile shows prosperity and when people see you in a good car they appreciate the fact that you can afford to own one."

Before Mrs. Kenney could get a start again, I began to talk by saying: "Now both of you take this thing easy. We will reason it out and get it settled right now." Then turning to Mrs. Kenney, I asked: "Just why do you object to going into debt?"

"I certainly do object to debt, be-

cause it means that the things you buy are not your own," Mrs. Kenney replied, with emphasis. "What pleasure can be greater than having a bank account? The first thing that a man wants to have is money in the bank. 'Keep out of debt' is my motto. All thrifty men and women say this very thing. Keep out of debt is the motto of every sensible person. This is why I object to going into debt of any kind. Do you blame me?"

"Now both of you just listen to me," I said slowly, "and listen to me good. You are both wrong and I want to prove it. You both mean well and are honest in your convictions, but your convictions are not based on the correct view point. In the first place, the old saying *Keep Out of Debt* is no longer so good as it was in our grandfathers' day. In these days of progress, getting into debt is a fine art and must be understood. Happy is the man who knows how to incur debt. Debt is a wonderful thing if properly acquired. If the purpose for getting into debt is a good one——"

"There is NO good purpose for getting into debt," Mrs. Kenney interrupted. "You can't tell me that owing every Tom, Dick and Harry is good. So THERE!"

"Now just hold your horses," Jack said rather kindly. "Just let him finish what he started to say. Then you may have your say."

"All right. Go ahead," she said resignedly.

"As I was saying," I went on, "getting into debt is a good thing if the purpose is a good one, but I don't think that a pleasure automobile is a wise thing at this time——."

"There! What did I tell you all along?" Mrs. Kenney exclaimed, triumphantly.

"Why do you think so?" Jack asked me, entirely ignoring her remark.

"Here is my reason, Jack," I answered. "In the first place, your business is not well enough established to warrant an automobile. You must equip your shop with better tools first. You must improve your chances to do better work and in this way pave the way for better income, which will afford a pleasure automobile. Get into debt as fast as you can for tools and equipment. Get into debt for anything that will help your business. Such debt will be a benefit to you and will put you in shape to render better and more efficient service. When you get into debt for such things, you will go into debt wisely and judiciously."

Jack just smiled and looked at his wife. She avoided his look and said nothing. Jack just looked at me and said: "I wanted to do just as you say. I wanted to get equipment that is more efficient, but she has always had a horror for what she calls debts, and I never could do anything along this line of improvement. She does not seem to understand the difference between legitimate debts and those that are illegitimate. What can you do with a wife like that?"

"And what is more, I am still of that opinion," Mrs. Kenney said, somewhat stubbornly. "A business man must start small and work his way up. Getting a lot of tools and not having a lot of work does not seem wise at all. Oh! I just despise debts!"

"I believe that you are wrong about this idea concerning debt," I said kindly. "You must consider that getting into debt for tools and equipment is the right thing to do. You should not narrow down to calling every kind of debt a detriment. You must discriminate between judicious debts and mere unnecessary debt. If Jack will only get into debt for the right things, he will be the gainer in the long run."

"Well, maybe you are right," Mrs. Kenney said half-heartedly, "but this automobile thing is positively against my wishes. Do you really think that we can afford to buy an automobile at this stage of our business?"

"To be frank with both of you," I said, "this is not the time for an automobile, but it is the time for getting better tools and equipment. Go into debt for these things and you will have a way to do better work and give better efficiency. Tools and equipment will put you in position to do more work with better accuracy and more speed. If you can accomplish this, you will soon own an automobile."

Jack and Mrs. Kenney were both silent. They were thoughtful.

Moral.

How about you, dear reader? Have you got the nerve to go into debt for better business methods? Have you a desire to be able to compete with better equipped business competition? Are you afraid of debt? Do you go into debt for satisfaction of *vanity* just to put up a false front in order to fool the public? Remember this one thing, and you will profit by it—it is this: You will only fool yourself with a false front. Four-flushing is not economy. It is folly. Debt is a good and beneficial thing if you know what to go in debt for. Debt is a wonderful medium for success if you just choose the right thing to owe money for. There is a difference between debts and debts. They both sound alike, but are different in nature. What do you think about it, brother?

Four-Flushing Is Not Economy

YOU only fool yourself with a false front.

Debt is a good and beneficial thing if you know what to go into debt for. It is a medium for success if you choose the right thing to owe money for.

Go into debt for tools and equipment and you put yourself in a position to render more efficient and dependable service.

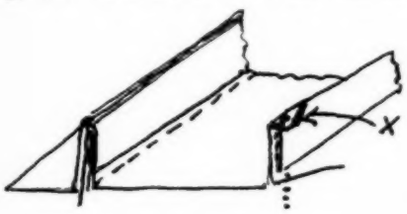
Discriminate between judicious and unnecessary debts.

The more you use your brains to save time and trouble and increase sales for the store, the more valuable you will be considered by the management. Employers are constantly on the lookout for men with initiative and "pep." Just another way of saying there is always room at the top.

Bonbrake Tells of Sad Experience of One Carelessly Laid Tin Roof.

In this article, L. S. Bonbrake, Peoria, Illinois, tells of the sad experience of one tin roofer and how the catastrophy which ruined him both financially and as a tradesman could have been avoided.

Some few years ago we saw the result of inexperience and a "hurry-up" job of tin roofing over a large flour mill. This negligence resulted in the destruction of the entire



north side of the roof of the mill and the loss or damage to thousands of bushels of wheat. The roofer was ruined both financially and as a tradesman in that locality.

I cannot give the exact size of the building, but it was a large one, several stories in height; it fronted the east, with side additions on the north and south just being built and the whole covered with a standing seam tin roof; the older part had a quarter pitch roof, while the pitch of the addition was much less.

No break was made in the strips of tin at the junction of the two pitches, the tin continuing in one strip from the comb to the eave, with nothing more than the snipping of the standing flanges in the corner at the junction to let the strip of tin fit down into the corner and adjust itself to the two pitches.

The worst feature, however, lay in the tinner having made his roof strips the 28-inch way of the tin instead of the proper 20-inch way, thereby giving eight inches more non-resistant surface, unprotected between the standing seams and nearly 50 per cent more width for vibration.

I have no doubt but that the cleats or anchorage were nailed in an equally loose, careless manner, instead of being nailed close up to the flanges, probably he nailed through the back edge of the cleat, and instead of spacing the cleats at least every eighteen inches, he placed them at any old place handy—two feet or more.

The nailing should be close and secure (1-inch spaced). A ten or fourteen-inch strip of roofing is formed to fit into the angle between the two pitches from gable to gable. A fold is made along its lower edge, back and under, to engage the fold made along the edge of the completed section of roof. These two folds are hooked together, malleted down smooth and secured from leakage by sweating solder thoroughly into the seam.

The upper edge of the strip is bent forward ½ inch, down upon itself, making a fold under which the nailing again is secure and close. The roof strips used in covering the second, steeper pitch are given a fold at the bottom which will engage the fold formed on the upper edge of the corner strip to be soldered as below.

By this method, the junction of the two pitches is thoroughly protected from any such damage as resulted from the careless work described.

A good tin roof can be laid under almost any conditions. However, the roofer should make it a point to display not his speed, but his skill.

When the roof was laid, the first heavy wind began to play with the northwest corner at the junction of the two pitches. In a short time it had raised it from the sheeting several inches, and as soon as the standing seams or some of them began to part and the wind got under the tin, the trouble was on. That side of the mill was stripped clean of cover and tin roofing was scattered abroad. A heavy rain poured in through the rent, damaging thousands of bushels of wheat and much valuable machinery. Quick, careless work had had its usual result.

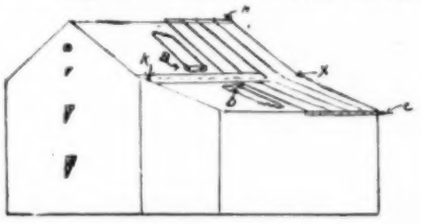
So long as there are men who attempt to prepare the material and apply it as a tin roof by any method where the stopwatch is involved. just so long will there be a handicap on tin roofing. The man of terrific speed in his work of preparing and laying tin roofing, uses a big notch or notches of variegated sizes, leaves nail heads exposed, uses few nails or cleats except when watched, skims the solder over the seams, leaves broken seams untouched, cuts his prices and trusts to his speed to bring the profit.

For a building such as the one described, a roof made from good roofing plate (terne-leaded) and properly applied is the best roof ever devised for the money.

The flat cross seams should have the solder thoroughly sweated in with a heavy, hot soldering iron, the sheets joined the 20-inch way with not less than a quarter-inch fold. The standing seam should be double-seamed smooth and tight, cleats nailed close up to the standing flange to give them a straight draw in seaming which will hold the standing seam close down onto the sheeting.

In the type of roof mentioned (two-pitch) the roofing strip should not be continuous from comb to eave, but should be broken on each side of the corner of junction of the two pitches.

The lower roof with less pitch when laid complete, should come to within six inches of the corner. The standing seams are malleted down



flat, smooth and tight onto the sheeting for a few inches from their upper ends, then curved with a spiral to the proper perpendicular again. The top end of the roof just laid may be lined and sheared to the line straight across the full length of the roof, then a half inch fold is formed from the end back itself under which the nailing should be close and secure (1-inch spaced); a ten or fourteen inch strip of roofing is formed to fit into the angle between the two pitches from gable to gable; a fold is made along its lower

edge, back and under, to engage the fold made along the edge of the completed section of roof. These two folds are hooked together, malleted down smooth and secured from leakage by sweating solder thoroughly into the seam.

The upper edge of the strip is bent forward one-half inch, down upon itself, making a fold under which the nailing again is secure and close. The roof strips used in covering the second, steeper pitch are given a fold at the bottom which will engage the fold formed on the upper edge of the corner strip to be soldered as below.

By this method, the junction of the two pitches is thoroughly protected from any such damage as resulted from the careless work described.

A good tin roof can be laid under almost any conditions. However, the roofer should make it a point to display not his speed, but his skill.

Monthly Meeting of Fur-Mets Held at Indianapolis July 6.

The regular monthly meeting of the Fur-Mets, held at Indianapolis, was called to order at 7:30 p. m. Friday by President Paul R. Jordan. In the absence of O. Vorhees, Secretary, Ralph Ingalls was appointed Acting Secretary.

The Outing Committee reported that it had, through its chairman, Joseph Mattingly, withdrawn the picnic set for July 2 and 3, on account of the closeness of the date to the national convention at St. Louis. The committee was commended for its desire to avoid any conflict with the national convention, and the picnic project was laid over for this year, on motion of Vice-President Philip Geitz.

Joseph Gardner and Fred Wilkening were called on to report on the St. Louis convention, and both paid enthusiastic tribute to the convention management and to St. Louis' hospitality. They mentioned particularly the many fine addresses, the remarkable banquet, the enjoyable stag entertainment and the wonderful municipal opera.

President Jordan invited the officers and committeemen of the Indiana Contractors' Association and of the Fur-Mets to come out and enjoy an afternoon and evening together at his summer cottage on White River near Indianapolis, on Saturday, July 28. Treasurer John C. Henley was asked to coöperate with F. A. Wilkening and Joseph Gardner in framing up an outline of informal activities for the day.

What Is a Bank? Who Supports It?

"The bank as an institution is so well known that most of us do not bother our heads to inquire about its inward organism or what supports it," says J. H. Tregoe, Secretary-Treasurer, National Association of Credit Men.

"In general, the bank has three functions: It receives deposits, pays checks and makes loans. It is not an eleemosynary institution; that is, not supported by charity; nor is it subsidized by the state. Its support must come from profits on certain classes of transactions.

"In business circles, where the bank's functions more largely appertain, I am sure there is not sufficient appreciation of its mechanism beyond the forms of service with which business has been favored.

"We find on the average that there is one commercial bank for about 3,500 people. In some states the average runs low. In North Dakota, for instance, there are not more than 800 people to a bank. The average is a little larger but still small in South Dakota and other western states. When the spread of population is too thin for the number of banks in operation, there is great danger that competition between the banks will lead to unwise loans and practices that will bring failure in times of depression or stress.

"Free banking laws are good as a relief from the danger of political preferment in the granting of charters, but the bank as an institution performs fiduciary services; that is, in the nature of a trust, and caution should be employed in its organization. The granting of national charters can be closely supervised, and in granting of state charters for banking institutions that degree of care should be exercised that will prevent the placing of banks where the population is too thin to sustain them, or where unsafe competition would be encouraged.

"It is a proper part of business and of the state to foster the safety of our banks and give them more attention and a deeper appreciation than in our rapid days and rapid movements have so far been accorded."

Notes and Queries

Automobile Fender Straighteners.

From Mr. O. B. Wright, R. R. 6, Marion, Illinois.

Where can I obtain an automobile fender straightener?

Ans.—Beck and Corbitt Iron Company, First Street, St. Louis, Missouri.

Royal Blue Lawn Mower.

From Ole Pederson, Kenyon, Minnesota.

Who makes the Royal Blue Lawn Mower stamped C & C.?

Ans.—Chadborn and Coldwell Manufacturing Company, Newburgh, New York.

Peerless Ice Cream Freezer and Fredendahl Safety Fish Holder.

From Henning and Geasland, Platteville, Wisconsin.

Who manufactures the Peerless Ice Cream Freezer? Where can I get the Fredendahl Safety Fish Holder?

Ans.—1. The Peerless Freezer Company, Winchendon, Massachusetts. 2. Von Lengerke and Antoine, 130 South Wabash Avenue, Chicago, Illinois.

The manager of the store must set an example in salesmanship. It is all right to suggest what the staff should do, but the best way to accomplish this is to do it yourself. They will soon follow. Then encourage them and tell them how well they are getting along.

Two Live Models Successfully Display Bathing Costumes and Accessories and Move the Goods at Kansas City.

Otto J. Gress Makes Use of Live Object Psychology in Designing Window for Bunting Hardware Company.

THESE two beauties are perperhaps not exactly Annette Kellermans, but nevertheless the psychology of placing a living model or object in the window is almost as old as the art of selling, but it is always good. Crowds are attracted to the most remote parts of the store by this means.

The truth of this statement is seen in the accompanying illustration which shows a display of bathing costumes and accessories. Although the photographic negative was supposed only to snap the two beauties in the window with their bathing attire, etc., the camera unknowingly got some of the crowd watching the demonstration.

In this particular instance the owners, the Bunting Hardware Company, Kansas City, Missouri, secured the services of two actresses who were then in the city.

Recently a large firm used this method successfully by hiring an Indian to stand in a window and point to a certain spot. The Indian then walked the streets and finally concluded his maneuvers by guiding his troop of followers to a room in the store in which were displayed the articles which the firm was trying to push.

The window display is well worked out and the illustration has the undeniable proof that it attracted the crowd. Great care should be exercised to avoid having the reflection of other stores across the street on the window.

Illustration Proves that the Crowds Can Be Successfully Attracted by Using the Live Model in Displaying Bathing Costumes and Accessories.

It is doubtful whether suits such as the young ladies have on would make much of an impression in the great metropolis like Chicago, but then the people in Kansas City are perhaps discreetly modest. That, however, is aside from the point in question in a hardware journal.

Some men boast. Others act.

Gronemeier Tells Hardware Men at Richmond Congress That Politeness Pays Big Dividends in Future Trade.

Says Retail Men Are Purchasing Agents for Their Communities and the Fact that They Sell the Products Must Be a Guarantee of Their Quality and Value.

THE following article embodies excerpts from the address on "Production Service and Sales Building" delivered by Alfred S. Gronemeier, Mount Vennon, Indiana, before the members of the National Retail Hardware Association at its Annual Congress, Hotel Jefferson, Richmond, Virginia, June 19 to 22, 1923:

In discussing productive sales and service building it is absolutely necessary to start with a conception that all business is a service, and is only justified to the extent that the service rendered is worth while. Our job and the justification of our existence is the carrying of stock, and stock the kinds of merchandise which will permit customers to make their selection or purchase by direct selection, which they cannot do if they purchase from the producer. We are the purchasing agents of our communities and the fact that we sell the products must be a guarantee of their quality and value. Furthermore, it is an obligation of the retailer through his experience with merchandise to assist inexperienced customers in the selection of proper goods for their individual requirements.

One of the greatest services the retailer can render to his community is the buying of the required merchandise at the right prices.

Make Your Customers Feel at Home In Your Store.

A merchant must study closely the community needs, its pleasures and its possibilities, and secure merchandise that is adaptable and will fit in the several places. He must not only educate his customers by newspaper advertising and window advertising, but have his store neat and clean, and goods well displayed, but to my mind one of the greatest assets a merchant has is the cultivation of the friendships, the creating of confidence of the community in his store and his personality. A merchant in a small place, especially where he knows most of his customers by name should be able to go up and down his store and slap Jim on the shoulder and shake hands with him (not as the political method which lasts only for a while) but all the time, learn to understand him, be familiar with his likes and dislikes, and I find in most cases men are glad to receive these advances. Make them feel at home in your store; in fact, make your store his headquarters, especially so in a rural community. Our store is in a southern Indiana city of a 5,000 population with a fine agricultural country surrounding. We try to have our customers use our store for their meeting place. We always have a good, warm fire in the winter and a bucket of hot water to help them start their Fords when they get ready to go home. And in Summer a cooler full of good ice water. We always keep this cooler in the rear of the store, so people must walk full length of store and see merchandise on display. Encourage them to use your telephone to call up home. Receive and give messages for them, cash cream checks especially at times when the banks are closed. In fact, make them feel you just like to do these things for them and they will surely be your good customers. I could name you many specific instances when I have rendered services entirely out of my regular business to customers and have been repaid by having whole families trade with us.

Politeness Pays Big Dividends in Future Trade

One store has a sign in plain view on the door as you leave, saying, "Thank You! Hurry back!"

Another says, "If we forget to thank you your purchase is Free!"

Right here I want to say something to our brother manufacturers who are here and are listening so intensely. I believe the methods we use could be applied to them.

We are made of the same clay as you men are and it would do you men good as well as ourselves if you fellows, especially you BIG fellows would warm up a little more to retailers who are the little fellows here. I mean just what I say! I believe every manufacturer here misses a great opportunity for expansion not only of acquaintance, but of real business if he doesn't take time and make it a point to personally meet every one of us. I expect you fellows to make the advances to us just as we do in our stores. If I don't go to my customer and encourage him in becoming better acquainted with me, it is not his place to come to me. So Mr. manufacturer, it is up to you. Here is the opportunity and you must not let it pass by. I surely would like to shake hands and be able to look into your faces, and then when I am handing your goods over the counter to my customers, I feel that I know everything is O. K., because I have seen and felt the flesh and blood behind the whole thing and in our buying we will be influenced by our acquaintances. You ought to more than meet your customers half way. Merchandising methods are rapidly changing and you do not know who or what is going to be eliminated in this great game of reducing costs, but we must be awake and shoulder the responsibilities. We must get at the heart of the job. Not just do surface thinking. No! we must think every angle of the job clear through. Surface thinking and looking for soft jobs are easy, but they are the death knell of success. Shoulder the responsibilities and pay the penalty assured that you will receive the reward in the end.

What Do We Mean By Productive Service

I just lately saw two or three letters from manufacturers to jobbers stating that the order was too small and that life was too short to bother with it. One order called for one dozen files of a certain specification and the other called for half dozen claw hammers larger than No. 1. Both of these orders were given by retailers. This I believe is one way in which the retailer tried to give his customer Productive Service and the manufacturers rendered UNproductive Service.

Crop Forecast for 1923 Shows Increase of Billion Over Last Year's Crops.

Great crops are again in prospect for the American farmer this year, according to the July forecast for leading products issued by the Department of Agriculture.

This year's crops will be worth over $1,000,000,000 more than last year's, on the basis of farm prices on July 1, 1923, compared with prices a year ago. Twelve of these crops, if they fulfill anticipations of the official forecast, will be worth $7,829,912,800 on the basis of prices on July 1, 1923. This total does not include tobacco and rice.

The value of the same twelve crops—exclusive of tobacco and rice—in 1922 was $6,768,208,000. The twelve crops are wheat, corn, oats, barley, rye, white potatoes, sweet potatoes, flaxseed, hay, cotton, apples and peaches.

Plans Are Completed for The Chicago Hardware Outing, Klein's Grove, July 18.

Hear ye! Hear ye! Don't forget to come to the Chicago Retail Hardware Association Outing, which will be held Wednesday, July 18, 1923, at Klein's Grove, Crawford and Lincoln Avenues, Chicago.

Invitations are being sent out by William Triesselmann, Secretary, Entertainment Committee, 3003 Belmont Avenue, Chicago.

Life is like a circus parade—the loudest noise is made by the fellows at the tail-end of the procession.

Profit Is the Difference Between the Invoice Price Plus Legitimate Expenses, Salary of Owner, Interest on Capital and Amount Received for Merchandise.

Legitimate Expense Does Not Include Speculation, Outside Investments and Political Donations, Says Glasgow at Richmond Congress.

SOME of the high points touched by C. L. Glasgow in his most interesting and highly instructive article on "What Is Profit?" delivered before the members of the National Retail Hardware Association at its Annual Congress, Richmond, Virginia, June 19 to 22, 1923:

Profit is something, I assume, we have all enjoyed to a greater or less extent or we could not have remained in business, but whether we have obtained as large a profit as we should, or failed to by reason of a lack of information or because we have indulged too great an expense, is worth finding out and if I could so answer this question as to guarantee to all of you gentlemen a larger profit in the future, I would at once become the most popular man in this convention.

No doubt you are all familiar with the story of the man in jail who sent for a lawyer and after telling him all about it the lawyer said, "why, Mose, they cannot imprison you for such an offense" and proceeded to state why. The prisoner listened very intently and after a while said: "Well boss dat sounds mighty good to me and I believe youse right, but boss ize in jail aint I?" and often it is that in theory our business schemes sound good but are not supported by the facts, and strange as it may appear but true nevertheless, there are business men who prefer to be fooled or even fool themselves rather than admit their mistakes.

One Noah Webster. a man posessed of more or less general information and whom a high school graduate on examination credited with being the author of the Psalms, ventured the statement that profit was the excess of value received for producing, keeping, or selling over cost, as a profit on the sale of goods.

The failure to understand what constitutes cost forms the basis for divergent and erroneous ideas as to profit, and notwithstanding the findings of trade organizations and the general government as to the average cost of conducting a retail business, men of limited means and less experience are assuming to contradict it every day; in fact, they have such confidence in their own judgment that they have to fail in business before being convinced of their error.

I believe Webster's definition of profit good enough for a dictionary, but it convinces me that he never ran a retail store.

Items Chargeable to Cost.

There appears to be little difference of opinion as to the item properly chargeable to cost, but there is a wide range of difference as to the amount of such items, take for instance rent, salary, insurance, taxes, heat, light, advertising, donations, etc., (and if no stated salary for proprietor is allowed) living expenses also must, of necessity, be reflected in the price charged for goods sold, if a profit is to be realized; therefore, in view of the difference in overhead due to local conditions, it cannot be said that profit is any definite percent added to invoice price.

Profit is largely determined by cost, because competition locally or in nearby towns will fix the selling price (except on specialties), therefore, with the selling price established, it is up to each dealer to decide for himself how much overhead or incidental expenses he will ask his sales to carry in excess of invoice price, and these are made up mostly of the elastic items just referred to.

Some business men are methodical and possess analytical minds that enables them to make a careful study of every item of expense classed as sales helps, sifting out and using only those which have proven most remunerative, while others go along apparently without any definite plans adopting such methods and incurring such expenses as from time to time appeal to their best judgment, and we are forced to admit that both classes are found among our successful business men although possibly not to the same extent.

Partnerships and Corporation Expense Items.

To my mind it is quite unimportant, where the business is owned and managed by an individual, from what fund he receives either his salary or return on investment. It is merely a matter of bookkeeping to enable one to make out the income tax report required by the government on the simple form which they prescribe.

Where the business is a partnership or corporation, I am of the opinion that the question of profit and its disposition will not be considered till after all overhead and other legitimate expenses have been paid including salaries to the respective partners or officers of the corporation rendering service, also a reasonable return upon the investment whether it was furnished or borrowed. This latter, however, appears to be more a discussion relative to the disposition of the profits rather than a definition.

I asked this question of a number of business men representing various lines and I give you some of the answers received.

First, profit is the net gain resulting from the successful conduct of business.

Secondly, the margin between cost and selling price, I read where one of the large manufacturers gave this same answer.

Third, the thing we continually strive to obtain, but in recent years only occasionally realize.

Fourth, the sustaining grace of commercial life, the star of hope that guides through a bewildering mass of business uncertainty.

Fifth, it is that part of one's business that creditors learn of with pleasure.

Now, gentlemen, I have not as yet answered the question proposed. I can well agree in principle with some of the definitions given, for instance the paying of a stated salary to the proprietor if he puts in his time with the business and the allowance for capital furnished.

If we confine our answer to the question as it relates solely to merchandising, I believe profit is the difference between the invoice price plus every reasonable and legitimate expense incident to the proper and economical conduct of the business, including salary of owner or owners rendering service, a legal rate of interest upon the capital invested, AND the amount received for the merchandise sold. It is understood that the term "legitimate expenses" does not include speculation, outside investments, political donations or any other form of legalized gambling.

Automobile Accessory Catalogue No. 19 Issued by Geller, Ward & Hasner Company.

Geller, Ward & Hasner Hardware Company of St. Louis, Missouri, have just issued an automobile accessory and equipment catalogue No. 19.

The firm says that this catalogue contains all information as to spark plugs, piston rings, batteries, brake linings, etc., which makes it a ready reference for the dealer on any car for which he may wish to order this class of goods.

Dealers interested in this catalogue in their territory should write for information from Geller, Ward & Hasner Hardware Company, 410 North 4th Street, St. Louis.

National Federation of Implement Dealers to Hold 1923 Convention in Chicago, October 17 to 19.

The Twenty-Fourth Annual Convention of the National Federation of Implement Dealers' Associations will be held in the Hotel Sherman, Chicago, October 17, 18 and 19, 1923. Details of the arrangements will be announced later.

This announcement was given out by Secretary H. J. Hodge, Abilene, Kansas.

The door to the temple of success is never left open.

Wisconsin Hardware Association Originates Display Background.

The Wisconsin Retail Hardware Association, Stevens Point, Wisconsin, has just offered its members a portable background for open windows. This five-fold background, decorated in the standard color scheme of the association, and carrying the association seal has been designed by the "Sales and Display Service." Mr. Nitz, who has charge of the department, has been very busy with special display and service work for the Wisconsin retailers.

Michigan Hardware Merchants Will Convene February 12 to 15, in Grand Rapids.

The next Annual Convention and Exhibit of the Michigan Retail Hardware Association will be held February 12 to 15, 1924, in Grand Rapids. Karl S. Judson, 248 Morris Avenue, Grand Rapids, is Manager of Exhibit, and Arthur J. Scott, Marine City, is Secretary.

G. A. Makinson Offers Plan for Selling Household Hardware Goods in Chile.

A favorite method of selling small household hardware items, such as castors, glass knobs, clothes hooks, and other types of household hardware in the Chilean market is to send out an American traveler thoroughly familiar with his goods and equipped with a complete line of samples, says Consul G. A. Makinson in a report to the Department of Commerce.

It is realized that this method of opening up new territory involves a considerable outlay, and it may well happen that the first trip may not be successful from a financial standpoint. In the long run, however, no other course is likely to bring such satisfactory returns.

This has been the experience of several well-known American manufacturers who now enjoy an almost complete monopoly in their respective lines in Chile. While it is true that the principal sales prospects are located either in Valparaiso or Santiago, nevertheless it would be advisable to have the representative call on the hardware trade in the nitrate ports as well as in Concepcion, Valdivia, and the other large towns in the south.

Should the sending of an American traveler not be considered feasible at this time another good method of developing business in Chile would be the appointment of a resident agent in a position to make regular calls on the trade.

Keen Competition for Plate Glass Prevails.

There is a lively competition for plate glass between building and automotive industries, and if both of these industries maintain their present activities, a considerable amount of plate-glass plant expansion will be necessary in order to supply the demand.

The output of one automobile maker in one day now calls for as much plate glass as the builders of the Drake hotel used. Last year's consumption of plate glass is already an obsolete figure, telling nothing of present conditions. One local glass man believes that the automobile manufacturers will use enough plate glass this year to build a line of Drakes from Devon Avenue to the present Drake hotel, Chicago, a distance of about seven miles.

The closed car of maximum sales, calls for five times as much plate glass as the windshields on the touring type. One auto manufacturer probably will use 15,000,000 square feet of plate glass this year.

Plate glass jobbers say that recent advances in prices cover increased labor costs only. Users of the smaller sizes of plate for desk tops, repair jobs, etc., claim that it is very hard to get the goods. The glazers' union, outside the Landis award, began last summer to import plate glass from Belgium, with a little from Czecho-Slovakia and Germany. Last July the price New York f. o. b. was 80 cents per square foot; last purchases were $1.90. Europe evidently has a plate glass boom also.

Coming Conventions

Ohio Sheet Metal Contractors' Association, Hotel Gibson, Cincinnati, Ohio, July 17, 18 and 19, 1923. William Miller, Secretary, Dayton, Ohio.

Sheet Metal Contractors' Association of Pennsylvania, Hotel Allen, Allentown, Pennsylvania, July 26 and 27, 1923. W. F. Angermyer, Secretary, 714 Homewood Avenue, Pittsburgh, Pennsylvania.

The twenty-fourth annual convention of the National Federation of Implement Dealers' Associations will be held at Hotel Sherman, Chicago, October 17, 18 and 19, 1923. H. J. Hodge, Abilene, Kansas, is Secretary.

Mountain States Hardware and Implement Association Convention, City Auditorium, Denver, Colorado, January, 1924. W. W. McAlister, Secretary-Treasurer, Boulder, Colorado.

Western Retail Implement and Hardware Association, Missouri Theater Building, Kansas City, January 15, 16, 17, 1924. H. J. Hodge, Secretary-Treasurer, Abilene, Kansas.

The West Virginia Retail Hardware Association, Convention and Exhibit, Huntington, West Virginia, January 15 to 18, 1924. James B. Carson, Secretary-Treasurer, 1001 Schwind Building, Dayton, Ohio.

Kentucky Hardware and Implement Association, Louisville, January 24-25, 1924. J. M. Stone, Secretary-Treasurer, 202 Republic Building, Louisville.

Indiana Retail Hardware Association, Inc., Convention and Exhibition, Cadle Tabernacle, January 29, 30, 31, February 1, 1924. G. F. Sheely, Secretary, Argos.

Wisconsin Retail Hardware Association Convention and Exhibition, Milwaukee Auditorium, February 6, 7, 8, 1924. George W. Kornely, Manager of Exhibits, 1476 Green Bay Avenue, Milwaukee. P. J. Jacobs, Secretary-Treasurer, Stevens Point.

Michigan Retail Hardware Convention and Exhibition, Grand Rapids, February 12, 13, 14, 1924. Karl S. Judson, Exhibit Manager, 248 Morris Avenue, Grand Rapids. A. J. Scott, Secretary, Marine City, Michigan.

New York Retail Hardware Association Convention and Exhibition, February 19, 20, 21, 22, 1924. Headquarters, McAlpin Hotel, and Exhibition at Seventy-First Regiment Armory. John B. Foley, Secretary, 412-413 City Bank Building, Syracuse.

The Ohio Hardware Association, Convention and Exhibit, Cincinnati, Ohio, February 19 to 22, 1924. James B. Carson, Secretary-Treasurer, 1001 Schwind Building, Dayton, Ohio.

Retail Hardware Doings

Illinois.

The Huey-Phelps Lumber Company, Virginia, which recently purchased the Arenzville Lumber Company's yards in Arenzville, has purchased the hardware stock. The change in ownership is effective immediately.

Kansas.

The E. M. Ward Hardware Company of Arkansas City has opened for business with a very good stock.

Lilly Hardware Company Cashes in on Canning Season Window Display Possibilities with Stoves and Aluminum Cooking Utensils.

Designer Concentrates on Associated Ideas and Thus Makes the Impression Almost Indelible upon the Pedestrian's Mind.

ADVERTISERS are almost universal in their convictions that the display window has unlimited possibilities as the silent salesman. These same men also agree that to make an attractive window display requires a peculiar skill; it requires an eye for the artistic.

In the accompanying illustration is seen a stove display made by the Lilly Hardware Company, 114 to 118 East Washington Street, Indianapolis, Indiana.

In this display of Direct Action stoves the designer has had due regard for the line of vision of the pedestrian; that is, he has placed two stoves in the window and has them at such an angle as to make them visible to the pedestrian as he approaches the window from a distance.

The display of kettles in conjunction with the stoves is a very good idea, especially at this time when the canning season is on.

In this window display you find the designer concentrating the observer's attention undividedly upon articles necessary for the canning season. It is assumed, of course, that the tire display seen to the left belongs to another window.

A window display to be successful must concentrate attention on one or correlated objects. It should not distract the observer's attention by placing a large number of articles in the window which have no relation to one another.

The science of associating objects together which are commonly used and seen together is a good one and should be used extensively.

If you do not think this is true try memorizing a number of unrelated facts and you will find that you are up against a hard proposition.

Templeton Says Conditions on Pacific Coast Are Excellent.

J. T. Templeton, Vice-President of Buck's Stove and Range Company, has just returned from a six weeks' trip to the Pacific Coast states, and he says that business conditions out there look very promising for a heavy trade this fall.

Their gas-electric combination range which they put on the market last year is taking hold in fine shape, not only where electricity is low in cost, but also in other localities, because, as Mr. Templeton puts it, the heating unit used in the range is not only quick in action, but also more lasting than most of those now on the market.

Leo Booch Says Stove Sales on Pacific Coast Beat All Other Sections.

Leo Booch, Vice-president and General Manager of the Bridge & Beach Manufacturing Company, makers of "Superior" stoves, ranges and furnaces, states that from their sales records, the Pacific Coast territory is in a very prosperous condition. Their sales quota for these states for the entire year was almost filled by July first, and retail stocks are low.

Mr. Booch left on Wednesday on a trip that will take in the Company's principal distributing centers in the Rocky Mountain and Pacific Coast states. He expects to be away about three weeks.

It's better to lose smilingly than to win whiningly.

Lilly Hardware Company, 114 to 118 East Washington Street, Indianapolis, Indiana, Takes Advantage of Seasonal Necessities of Housewife Occasioned by Demands of Canning Season to Push Sales on Stoves and Aluminum Ware Utensils.

Business Has Had No Important Recessions—Consumption Continues Heavy, But Demand is on Hand to Mouth Basis.

Prices Are Falling Gradually Without Indication of Sharp Drop—Dividends Are Increased—Non-Ferrous Metals Somewhat Stronger.

FREIGHT traffic during the week ended June 30 was the heaviest ever handled by the American railroads, not even excluding the peak movement ordinarily resulting from the autumn crop movement.

In the final week of June car loadings totaled 1,021,770 cars, breaking the former record of 1,018,539 cars, established in October, 1920, and being 19,030 more cars than in the preceding week and 158,925 more than a year ago.

Every commodity classification showed increases in the freight volume. This seems to leave small room for doubt that consumers continue to buy liberally in practically all lines, especially when coupled with statements from manufacturers and merchants that they are not overproducing nor "stocking up" for future trade.

The prices in non-ferrous metals are a little stronger than they were a week ago, with the exception of lead which continues to decline.

Copper.

Domestic consumers of copper are showing a little more interest.

In the markets outside of New York offerings are growing smaller, rather than otherwise, and the tone of the market is improving, although there is not much demand.

Electrolytic is held at 14.50 cents f. o. b. refinery, for prompt, August or third quarter shipment and fourth quarter position is difficult to buy under 14.62½ cents refinery.

Although some electrolytic copper has been sold by custom smelters and small producers as low as 14.25 cents and 14.37½ cents delivered recently, these interests are not disposed to sell under 14.50 cents delivered, while second hands are asking fully ⅛ cent more.

Prime lake copper is held a little more firmly at 14.87½ cents to 15.00 cents delivered while casting copper is steadier at 14.25 cents f. o. b. refinery.

Tin.

There is no eagerness to make sales in tin.

The Straits shipments for June were 500 to 1,000 tons less than was expected early in the month, which is believed to have been caused by transportation, some steamers being delayed in sailing.

Regarding Business Outlook

President Parson, of the F. W. Woolworth Company, finds merchandise prices to be on a stable basis, and is so satisfied with this that his organization is buying ahead in the expectation of a continuation of the heavy trade of the past few months.

Recently there was a meeting of the district managers from all parts of the country. Without exception they reported their own business good, and the general business outlook in their respective localities to be excellent.

The experience of the Woolworth organization is paralleled by the mail order houses, and the inference is that the people are making money and spending it. This does not mean that there is a return of the wild extravagance of three years ago, but that the people themselves have confidence enough and apparently have no idea of a buyers' strike.

The market is comparatively firm, but dull. Spot tin is still at a premium of ¼ cent per pound over futures, with buyers at 38.25 cents and sellers at 38.37½ cents.

For futures 38.00 cents is freely bid, and while some special business has been done at the price the general market is 38.12½ cents.

The July position is strongly held, the belief continuing that the arrivals of tin this month from now on will be small. If this proves to be the case it will mean that the deliveries in America will show a decided drop, and as the Straits shipments will be large, the visible supply at the end of the month will show what may prove to be a heavy increase.

Lead.

The price of lead was reduced on Wednesday, July 11, from 6.25 cents to 6.10 cents New York. The St. Louis market dropped to 5.80 cents a pound the same day. This is the eleventh cut since the peak of 8.25 cents in March.

The fractional but repeated declines are causing less dislocation now with moderate stocks in all hands, dealers, consumers, and smelters, than would be the case later with an accumulation on the market. The desire is evidently to trim production to the lessening scale of consumption.

Zinc.

The zinc market is strong with offerings scanty, demand good and an increased consumer inquiry.

In New York sales were reported at 6.00 cents East St. Louis basis for July prime Western, 6.05 cents for August, 6.10 cents for September. These prices were bid Wednesday for good sized tonnages, without finding sellers, and the market is nominally 5 to 10 points above these figures.

Few producers are offering at present, and those quite sparingly. The smelter's position is not a comfortable one in respect to ore costs, both present and prospective and as previously pointed out the advance in slab hardly covers yet last week's advance in ore.

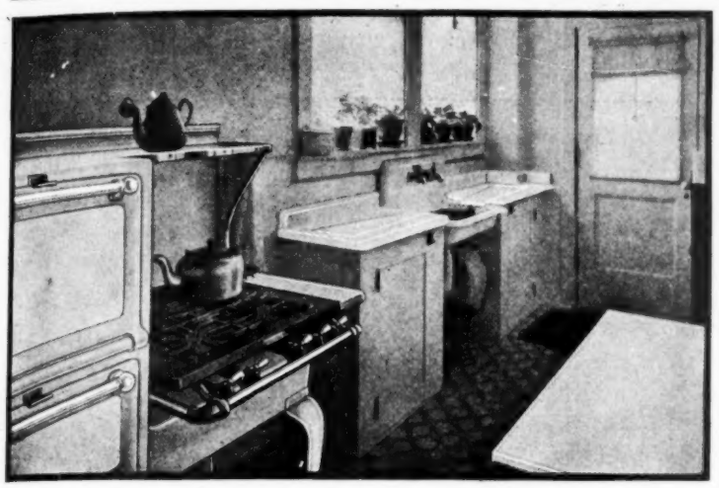
Solder.

Chicago warehouse prices on solder are as follows: Warranted 50-50, $24.50; Commercial, 45-55, $22.75, and Plumbers', $21.00.

BELOW is reproduced one of the many advertisements The American Rolling Mill Company is running in the Saturday Evening Post. The Post has a circulation of 2,500,000.

Add to this the circulation of twenty leading trade papers, and you get some idea of the tremendous force of advertising behind ARMCO-Ingot Iron.

Hardware merchants can reap the benefit of Armco advertising by calling their customers' attention to products made of rust-resisting ARMCO-Ingot Iron.



The beauty secret of enamel is more than skin deep

The modern housewife, like the efficient business man, must know the simple facts about iron

IF your enameled table-top or refrigerator keeps its satin finish indefinitely, there is a reason for it deeper than your eye can see.

The secret lies beneath the surface which the enamel covers up. One big reason why enameled tub-covers, stoves and things of that sort are so much better than they used to be is the very general use by manufacturers of ARMCO Ingot Iron—the purest iron made.

Enamel at its Best

Not only is ARMCO Ingot Iron practically free from impurities but it is close-grained and even, with a soft, velvety surface that takes a perfect and permanent coating of enamel. There are no lumps or blisters in enameled ARMCO Ingot Iron. There are no little pockets of gas to erupt like miniature volcanoes and "pit" the enameled surface.

Or a Coating of Zinc

The same special qualities that make ARMCO Ingot Iron so fine for enameling enable it to take a zinc coating that is smooth and lasting. If your hot-water heater, your furnace, your ash can, the gutters on your house, are made of zinc-coated ARMCO Ingot Iron, you need have no worry about the surface flaking off and corrosion setting in.

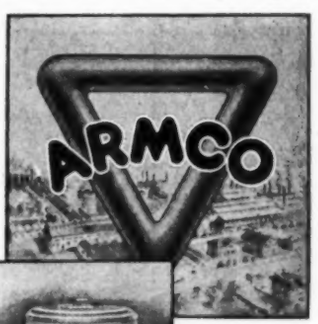
What Makes Things Rust?

It is the impurities in ordinary iron or steel that permit rust. When science found that out, we determined to produce what did not then exist—practically pure iron in commercial quantities.

After long research we discovered and patented the way, and gave to the world ARMCO Ingot Iron—the iron that resists rust. Great care is required in making so pure an iron. It must go through many extra processes from the picking of the raw material to the final inspection of the finished sheet, but the result is that today ARMCO Ingot Iron is used by great industries of all kinds and is known for its durability in millions of American homes.

Right in Your Home

When you buy a stove, a washing machine or a garbage pail it is relatively as important to get one that is made of ARMCO Ingot Iron as it is for the man at the head of a factory to install this iron in his plant.



WHERE TO LOOK FOR "ARMCO"

Here are some of the everyday uses of ARMCO Ingot Iron:

WITHIN THE HOUSE

Stoves
Washing Machines
Garbage Cans
Ash Cans—Pails
Refrigerators
Furnace Drums
Hot-Water Tanks
Table Tops
Tub Covers
Electric Light Reflectors

IN INDUSTRY

Welding
Smoke Stacks
Oil & Water Tanks
Acetylene Tanks
Freight Car Roofs
Coal Car Sidings
Drainage Systems
Car Heaters
Gasoline Tanks
Coal Tipples
Wire Fencing
Metal Doors
Grave Vaults & Caskets
Culverts
Flumes
Farm Equipment

IN BUILDING

Coping
Siding
Roofing
Flashing
Eaves Trough
Down Spouting
Skylights
Ventilating Systems
Window Frames
Metal Lath

OTHER ARMCO PRODUCTS

Armco chemists and metallurgists, working in the most complete laboratory of its kind in America, have developed not only ARMCO Ingot Iron, but also Armco steel sheet specialties for the automobile, electrical and other industries. The American Rolling Mill Company are makers of high grade special sheets to meet the demands of exacting manufacturers. Technical information will be supplied to any manufacturer as to the special qualities of Armco products and their adaptability to any particular use.

Easy to Recognize

We, who make ARMCO Ingot Iron, are proud of it, and we stamp our brand—the Armco triangle—on the sheets before they leave our mills. This identifies it when you buy it in zinc-coated sheet form for building and other purposes. The sheet metal worker or builder will gladly point it out to you.

Manufacturers of scores of articles use ARMCO Ingot Iron. They are glad to have you know they are using this fine product. So they put the blue and gold Armco label on their wares before they go to the stores, and the salespeople are familiar with this label.

It will pay you, whenever you need anything made of sheet metal, to specify by name ARMCO Ingot Iron and to identify it by the trademark.

THE AMERICAN ROLLING MILL COMPANY, Middletown, Ohio

ARMCO
TRADE MARK
INGOT IRON
Resists Rust

Tin Plate.

The tin plate market, on the whole, is decidedly firm, but it is plain that the firmness is made by the continued restriction in production.

In the case of a few tin plate contracts at least deliveries have been running in arrears, and this has led some producers to seek to buy from their competitors, but such overtures have not been well received, and so far as is known not a single transaction between manufacturers has occurred in the past few weeks.

Outside of possible orders for oil containers, substantially all the tin plate business for the current quarter has been done.

As to the fourth quarter, there is no market opened as mills have not formally offered material. When order books were opened, late in April, it was for third quarter only. From the appearance of things at present there would be little buying for fourth quarter if order books were open.

While there is much talk in the trade about pressure for deliveries, there is no hint that delivery premiums would be asked or paid. On the other hand there is no cutting of the regular price, which is $5.50. Stock plate goes at prices under the basis according to the undesirability of the size, just as it does in very strong markets.

Sheets.

The majority of independent sheet mills in Pittsburgh were closed last week, and while a few were resumed this week more than half of those that closed are still idle. One or two plants, it is understood, will be idle a total of four weeks, though the average time of all mills that closed will hardly be more than a fortnight.

The tonnage on order books would in nearly all cases have justified a continuance of operations without any break, but the jobbers and manufacturing consumers who had placed the orders were not clamoring nearly as much as formerly for deliveries, and it is probably quite safe to say that the closings caused no particular inconvenience.

Market prices are steady at 3.00 cents for blue annealed sheets, 3.85 cents for black sheets and 5.00 cents for galvanized sheets. It remains the case that rumors of price cutting cannot be confirmed, except as they may refer to special transactions in which the regular price would not obtain no matter how strong the market. It is the usual thing for such rumors to start in advance of the event.

When sheet prices really will yield cannot be predicted. It cannot even be predicted positively that they will decline at all on the next change. It can merely be said that there is quite a balance of probability that the next change will be a decline.

The various consumers of sheets are working very well, there being no appreciable decline in the rate of sheet consumption. The dullness in the market is made by buyers being extremely conservative.

Old Metals.

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, $21.00 to $21.50; old iron axles, $27.00 to $27.50; steel springs, $22.00 to $22.50; No. 1 wrought iron, $15.50 to $16.00; No. 1 cast, $18.50 to $19.00, all per net tons. Prices for non-ferrous metals are quoted as follows, per pounds: Light copper, 9½ cents; light brass, 5 cents; lead, 4¼ cents; zinc, 3½ cents; and cast aluminum, 15 cents.

Pig Iron Production Undergoes Curtailment, While Stocks Accumulate; Prices Too Low for Profitable Operation.

Shrinkage in Foundry Iron Industry Due to Forced Cancellations by Foundries—General Situation Not Unfavorable.

PIG IRON production is in excess of consumption and producers now generally realize that the only way to check the downward tendency of prices is to curtail output. Some furnaces have been put out of blast, but as a rule, producers are trying to stick it out as long as possible. While they realize that more furnaces must be blown out, most of them are leaving it to the other producers to take such action.

Investigation of the factors in the pig iron situation are far from unfavorable, however. It is true that there has been a slight shrinkage in consumption by the foundry industry, but this apparently has been due to labor shortage rather than to any appreciable falling off in business. Foundries right and left are being forced to cancel orders, due to the fact that they are unable to get out the production they had expected. The whole trouble in pig iron seems due to the fact that production is in excess of consumption.

The Iron Trade Review says regarding the situation:

"Undoubtedly the curtailment of production will receive more impetus now that prices have reached a level which is too low to permit of profitable operation of many furnaces. In the East, foundry iron has been sold at $27, furnace, for the base grade. Probably none of the eastern furnaces are able to produce iron at less than $26 when they take all their cost factors into account. With a number of them the cost is put as high as $29. Elsewhere a good many producers are finding their costs bring them a loss on the present selling prices. Thus curtailment of pig iron production rapidly is becoming a matter of economic necessity for many furnaces."

Small sales of foundry iron at Pittsburgh are being made at $25.50 to $26, valley.

Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS

PIG IRON.

Chicago Foundry	28.00 to 28.50
Southern Fdy. No. 2	31.01 to 33.01
Lake Sup. Charcoal	36 65
Malleable	28.00 to 28.50

FIRST QUALITY BRIGHT TIN PLATES.

			Per Box
IC	14x20	112 sheets	$12 45
IX	14x20		14 05
IXX	14x20	56 sheets	17 57
IXXX	14x20		18 12
IXXXX	14x30		18 65
IC	20x28	112 sheets	27 50
IX	20x28		29 85
IXX	20x28	56 sheets	16 15
IXXX	20x28		17 20
IXXXX	20x28		18 25

TERNE PLATES.

				Per Box
IC	20x28, 40-lb.	112	sheets	$25 60
IX	20x28, 40-lb.	"	"	28 50
IC	20x28, 30-lb.	"	"	21 80
IX	20x28, 30-lb.	"	"	24 70
IC	20x28, 25-lb.	"	"	20 80
IX	20x28, 25-lb.	"	"	23 70
IC	20x28, 20-lb.	"	"	18 30
IV	20x28, 20-lb.	"	"	21 15
IC	20x28, 15-lb.	"	"	17 05
IC	20x28, 12-lb.	"	"	15 75
IC	20x28, 8-lb.	"	"	14 05

COKE PLATES.

Cokes, 80 lbs., base, 20x28	$14 05
Cokes, 90 lbs., base, 20x28	14 30
Cokes, 100 lbs., base, 20x28	14 65
Cokes, 107 lbs., base, IC 20x28	15 10
Cokes, 135 lbs. base, IX 20x28	17 15
Cokes, 155 lbs. base, 56 sheets	9 30
Cokes, 175 lbs. base, 56 sheets	10 10
Cokes, 195 lbs. base, 56 sheets	10 95

BLUE ANNEALED SHEETS.

Base ..... per 100 lbs.	$4 00

ONE PASS COLD ROLLED BLACK.

No. 18-20 ..... per 100 lbs.	$5 00
No. 22-24 ..... per 100 lbs.	5 05
No. 26 ..... per 100 lbs.	5 10
No. 27 ..... per 100 lbs.	5 15
No. 28 ..... per 100 lbs.	5 20
No. 29 ..... per 100 lbs.	5 30

GALVANIZED.

No. 16 ..... per 100 lbs.	$5 60
No. 18-20 ..... per 100 lbs.	5 75
No. 22-24 ..... per 100 lbs.	5 90
No. 26 ..... per 100 lbs.	6 05
No. 27 ..... per 100 lbs.	6 20
No. 28 ..... per 100 lbs.	6 35
No. 30 ..... per 100 lbs.	6 85

BAR SOLDER.

Warranted.	
50-50 ..... per 100 lbs.	24 50
Commercial.	
45-55 ..... per 100 lbs.	22 75
Plumbers ..... per 100 lbs.	21 00

ZINC.

In Slabs	6 18

SHEET ZINC.

Cask lots, stock, 100 lbs.	11 00
Less than cask lots, 100 lbs.	11 50

BRASS.

Sheets, Chicago base	23½c
Mill Base	23¾c
Tubing, brazed, base	28½c
Wire, base	19¼c

COPPER.

Sheets, Chicago base	23¾c
Mill Base	23c
Tubing, seamless, base	27c
Wire, No. 9 & 10 B. & S. Ga.	22½c
Wire, No. 11 B. & S. Ga.	22c
American Pig	5 75
Bar	6 75
Bar	7 75
Sheet.	
Full Coils ..... per 100 lbs.	10 25
Cut coils ..... per 100 lbs.	11 25

TIN.

Pig Tin ..... per 100 lbs.	39 75
Bar Tin ..... per 100 lbs.	40 75

HARDWARE, SHEET METAL SUPPLIES, WARM AIR HEATER FITTINGS AND ACCESSORIES.

ADZES.

Coopers'.	
Barton's	Net
White's	Net

AMMUNITION.

Shells, Loaded, Peters.	
Loaded with Black Powder	18%
Loaded with Smokeless Powder	18%
Winchester.	
Smokeless Repeater Grade	20 & 4%
Smokeless Leader Grade	20 & 4%
Black Powder	20 & 4%
U. M. C.	
Nitro Club	20 & 4%
Arrow	20 & 4%
New Club	20 & 4%
Gun Wads—per 1000.	
Winchester 7- 8 gauge	10&7½%
" 9-10 gauge	10&7½%
" 11-28 gauge	10&7½%

ASBESTOS.

Paper up to 1/16	6c per lb.
Rollboard	6¼c per lb.
Millboard 3/32 to ⅛	6c per lb.
Corrugated Paper (250 sq. ft. to roll)	$6.00 per roll

AUGERS.

Boring Machine	40&10%
Carpenter's Nut	50%
Hollow.	
Stearns, No. 4, doz.	$11 50
Post Hole.	
Iwan's Post Hole and Well	35%
Vaughan's, 4 to 9 in.	$15 60

AXES.

First Quality, Single Bitted (unhandled, 3 to 4 lb., per doz.	$14 00
Good Quality, Single Bitted, same weight, per doz.	13 00

BARS, CROW.

Steel, 4 ft., 10 lb.	$ 80
Steel, 5 ft., 18 lb.	1 40
Pinch bars, 5½ ft., 24 lb.	1 60

BARS, WRECKING.

V. & B. No. 12	$0 34
V. & B. No. 24	0 43
V. & B. No. 324	0 57
V. & B. No. 30	0 48
V. & B. No. 330	0 63

BITS.

All Vaughan and Bushnell.	
Screw Driver, No. 30, each	$ 27
Screw Driver, No. 1, each	16
Reamer, No. 80, each	41
Reamer, No. 100 each	41
Countersink, No. 13, each	20
Countersink, Nos. 14-15 each	27

BLADES, SAW.

Wood.			
Atkins 30-in. Nos.	6	40	26
	$8 90	$9 45	$5 40

BLOCKS.

Wooden	45%
Patent	45%

BLOW TORCHES (See Firepots).

BOARDS.

			Per Doz.
Stove.			
26x26,	wood	lined	$14 45
28x28,	"	"	16 95
30x30,	"	"	19 00
26x26,	paper	lined	8 15
28x28,	"	"	9 10
30x30,	"	"	10 80
Wash.			
No. 760, Banner Globe (single)		per doz.	$5 25
No. 652, Banner Globe (single)		per doz.	6 75
No. 801, Brass King,		per doz.	8 25
No. 860, Single—Plain Pump			6 25

BOLTS.

Carriage, Machine, etc.	
Carriage, cut thread, ⅜x6 and sizes smaller and shorter	45-5%
Carriage sizes, larger and smaller and shorter	40-5%
Machine, ⅜x4 and sizes smaller and shorter	50%
Machine, sizes larger and longer than ⅜x4	40-10%
Stove	70-5%

BRACES, RATCHET.

V. & B. No. 444 8 in.	$4 54
V. & B. No. 222 8 in.	3 89
V. & B. No. 111 8 in.	3 55
V. & B. No. 11 8 in.	3 02

BURRS.

Copper Burrs only	30%

BUTTS.

Steel, antique copper or dull brass finish—case lots—3½x3½—per dozen pairs	$3 48
4x4 " " "	4 74
Heavy Bevel steel inside sets, case lots— per dozen sets	8 00
Steel bit keyed front door sets, each	2 00
Wrought brass bit keyed front door sets, each	4 00
Cylinder front door sets, each	8 50

CARRIERS.

Hay.	
Diamond, Regular	each, net
Diamond, Sling	" "

CATCHERS, GRASS.

Wire frame, adjustable bottom, white duck, for 12" to 16" mowers, dozen	$9 00
Same kind for 16" to 20".	10 50

CEMENT, FURNACE.

American Seal, 5 lb. cans, net	$ 45
" " 10 lb. cans, "	90
" " 25 lb. cans, "	2 00
Asbestos, 5 lb. cans "	45
Pecora ..... per 100 lbs.	7 51

CHAINS.

Proof Coil, ⅜" 100 lbs.	$ 9 75
Amercain Coil	40-10%
Electric Cow Welded Ties No. 00, 4½, per doz.	3 00

CHIMNEY TOPS.

Iwan's Complete Rev. & Vent.	30%
Iwan's Iron Mountain only	35%

CHISELS.

Cold.	
V. & B. No. 25, ¼ in., each	$0 26
V. & B. No. 25, ⅜ in., each	41
Diamond Point.	
V. & B. No. 55, ¼ in.	0 31
V. & B. No. 55, ½ in.	0 48
Firmer Bevelled Round Nose.	
V. & B. No. 65, ¼ in.	0 29
V. & B. No. 65, ½ in.	0 40
Socket Firmer.	
Cape.	
V. & B. No. 50, ⅜ in.	0 31
V. & B. No. 50, ⅝ in.	0 57

CHUCKS, DRILL.

Goodell's, for Goodell's Screw Drivers	List less 35-40%
Yankee, for Yankee Screw Drivers	$6 00

CLAMPS.

Adjustable.	
Martin's	30%
No. 62, Screw	20%
No. 100, Door (Stearns) doz.	$22 00
Carpenters'.	
Steel Bar	List price plus 20%
Carriage Makers'.	
2½-inch ..... per doz.	$ 7 00
5 - " ..... "	14 00
8 - " ..... "	28 00
12 - " ..... "	42 00
Hose.	
Sherman's brass, ¾-inch per doz.	$0 48
Double, brass, ¾-inch, per doz.	1 20

CLIPPERS.

Bolt (Carolus).	
No. 0	$2 50
No. 1	3 25
No. 3	4 25

CLIPS.

Damper.	
Acme, with tail pieces, per doz.	$1 25
Non Rivet tail pieces, per doz.	35
Non Rivet Clips	30
Hame	65

COPPERS—Soldering.

Pointed Roofing.		
3 lb. and heavier	per lb.	40c
2½ lb.	"	45c
2 lb.	"	48c
1½ lb.	"	55c
1 lb.	"	60c

CORD.

No. 7 Std. per doz. banks	$10 80
No. 8 " " " "	12 50

COUPLINGS, HOSE.

Brass ..... per doz.	$2 25

CUT-OFFS

Standard gauge	35%
26 gauge	20%
Kuehn's Korrekt Kutoffs: Galv., plain, round or cor. rd.	
Standard gauge	40%
26 gauge	10%

DAMPERS, STOVE PIPE.

Diamond.	
6-inch ..... per doz.	$1 65
Cast "American."	
6 inch per doz.	$1 55
7 " " "	2 25
8 " " "	3 55
9 " " "	5 20
10 " " "	6 60
12 " " "	8 00
Check.	
7 inch, each	$1 00
8 " "	1 25
9 " "	1 50
10 " "	1 75
12 " "	2 25
Hot Air	40-10%

DIGGERS.

Post Hole.	
Iwan's Split Handle (Eureka) 4-ft. Handle ... per doz.	$14 00
7-ft. Handle ... per doz.	36 00
Iwan's Hercules pattern, per doz.	14 90

DRILLS.

V. & B. Star, 12-inch Length.	
¼, 5/16 and ⅜, each	$ 36
⅜, each	36
1, each	54
1¼, each	81
V. & B. Star, 18-inch Length.	
5/16 and ⅜, each	$ 33
⅜, each	45
1, each	69
1¼, each	1 05

EAVES TROUGH.

Milcor	
Galv. Crimpedge, crated	70-5%

ELBOWS—Conductor Pipe.

Galvanized Steel, Tin and Terne Plain Round or Round Corrugated	
2 to 6 inch, Std. gauge	60%
2 to 6 inch, 26 gauge	40%
2 to 6 inch, 24 gauge	10%
Milcor	
Galv., plain or corrugated, round flat.	
Crimp, Std. gauge	60%
26 Gauge Std. gauge	40%
24 Gauge Std. gauge	10%
Square Corrugated.	
Standard gauge	45%
26 gauge	30%
Milcor	
Standard gauge	45%
26 gauge	30%
Portico Elbows.	
Standard Gauge Conductor Pipe, plain or corrugated.	
Not nested	70 & 5%
Nested solid	70 & 5%

ELBOWS—Stove Pipe.

1-piece Corrugated. Uniform.

	Doz.
5-inch	$1 45
6-inch	1 60
7-inch	2 10

Special Corrugated.

	Doz.
6-inch	$1 45
7-inch	1 75

Uniform, Collar Adjustable.

	Doz.
5-inch	$2 00
6-inch	2 10
7-inch	2 60

WOOD FACES—50% off list.

FENCE.

Field Fence	60½
Lawn "	53%

FILES AND RASPS.

Heller's (American)	65-5%
American	65-5%
Arcade	60 & 10%
Black Diamond	50-5%
Eagle	60-10%
Great Western	60 & 10%
Kearney & Foot	60 & 10%
McClellan	60 & 10%
Nicholson	50-10%
Simonds	60%

FIRE POTS.

Ashton Mfg. Co.
Complete line Firepots and Torches...52%

Otto Bernz Co.

No. 1 Furn. Gasolene with large shield, 1 gal.	$ 6 75
No. B Furn. Kerosene, 1 gal.	15 12
No. 10 Brazier, Kerosene or Gasolene, 10 gals.	47 52
No. 5 Torch, Gasolene or Kerosene, 1 pt.	7 92
No. 83 Torch, Gasolene, 1 quart	5 40
No. 36 Torch, Gasolene, 1 pt.	4 05

Clayton & Lambert's.
East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Amarillo, San Angelo and Laredo, Texas 52%
West of above boundary line.48%

Geo. W. Diener Mfg. Co.	Ea.
No. 02 Gasolene Torch, 1 qt.	$ 5 55
No. 0250, Kerosene or Gasolene Torch, 1 qt.	7 50
No. 10 Tinners' Furn. Square tank, 1 gal.	12 60
No. 15 Tinners' Furn. Round tank, 1 gal.	12 00
No. 21 Gas Soldering Furnace	3 60
No. 110 Automatic Gas Soldering Furnace	10 50

Double Blast Mfg. Co.
Gasolene, Nos. 25 and 35...60%

Quick Meal Stove Co.
Vesuvius, F.O.B. St. Louis 30% (Extra Disct. for large quantities)

FREEZERS—ICE CREAM.

Peerless and Alaska	
1 quart	$2 95
2 quart	3 45
3 quart	4 10
White Mountain	
½ quart	$3 50
1 quart	4 90
2 quart	5 70

GALVANIZED WARE.

Pails (Competition), 8-qt.	$2 20
10-qt.	2 50
12-qt.	2 75
14-qt.	3 00
Wash tubs, No. 1	7 25
No. 2	8 00
No. 3	9 25

GARAGE DOOR HARDWARE.

Stanley .....All net

GAUGES.

Marking, Mortise, etc.....Nets

Wire.
Disston's 25%

GIMLETS.

Discount .....65% and 10%

GLASS.

Single Strength, A and B, all sizes .....83 & 85%
Double Strength, A, all sizes 84%

GREASE, AXLE.

Frazers'	
1-lb. tins, 36 to case, per case	$ 4 70
3-lb. tins, 24 to case, per case	7 80
5-lb. tins, 12 to case, per case	7 20
10-lb. tins, per dozen	10 40
15-lb. tins, per dozen	13 80
25-lb. tins, per dozen	19 80

HAMMERS, HANDLED.

	Each, net
All V. and B.	
Blacksmiths' Hand, No. 0, 26-oz.	$1 00
Engineers' No. 1, 26-oz.	1 00
Farrier's, No. 7, 7-oz.	93
Machinists', No. 1, 7-oz.	78
Nail.	
Vanadium, No. 41, 20-oz. each	1 45
Vanadium, No. 41½, 16-oz., each	1 45
V. & B., No. 11½, 16-oz. each	1 04
Garden City, No. 111½, 16-oz., each	87
Tinner's Riveting, No. 1, 8-oz., each	82
Shoe, Steel, No. 1, 18-oz., each	65
Tack.	
Magnetic. No. 5, 4-oz., each	72

HAMMERS, HEAVY.

Farrier's 20%
Mason's.
Single and Double Face....50%

HANDLES.

Axe.	
Hickory, No. 1 ....per doz.	3 00
Hickory, No. 2 .... "	4 00
1st quality, second growth	6 00
Special white, 2nd growth	4 50
Chisel.	
Hickory, Tanged, Firmer Assorted .....per doz.	55c
Hickory, Socket, Firmer, Assorted .....per doz.	70c
File.....per doz.	$1 20
Hammer and Hatchet.	
No. 1 per doz.	$0 90
Second growth hickory, per doz.	1 40
Soldering.	
Per doz.	$2 40

HANGERS.

Conductor Pipe.
Milcor Perfection Wire....25%

Eaves Trough.
Steel hangers 30%
Triple Twist wire.....10%
Milcor Eclipse Wire.....20%
Milcor Triplex Wire.....15%
Milcor Milwaukee Extension.15%
Milcor Steel (galv. after forming) List plus.....12½ %
Milcor Selflock E. T. Wire, List plus 40%

HASPS.

Hinge, Wrought, with staples, Net

HATCHETS.

V. and B. Supersteel.	Each
Broad, No. 1, 24-oz.	$1 43
Broad, No. 3, 32-oz.	1 78
Half, No. 1, 15-oz.	1 25
Half, No. 3, 27-oz.	1 37
Claw, No. 1, 19-oz.	1 31
Claw, No. 2, 25-oz.	1 37
Flooring, No. 1, 20-oz.	1 43
Flooring, No. 2, 24-oz.	1 60
Shingling, No. 1, 17-oz.	1 20
Shingling, No. 2, 23-oz.	1 25
Lathing, No. 1, 14-oz.	1 20
Lathing, No. 2, 17-oz.	1 25
Vanadium Steel.	
Half, No. 62, 22-oz.	$1 82
Underhill Pattern Lathing, 9 row, 19-oz.	2 29

HINGES.

Heavy Strap, in Bundles.	
4 inch, dozen prs.	$1 12
5 " " "	1 57
6 " " "	1 93
8 " " "	3 95
Extra Heavy T in Bundles.	
4 inch, dozen prs.	$1 74
5 " " "	1 85
6 " " "	2 31
8 " " "	3 97

HOES.

Garden .....Net

HOOKS.

Box.	
V. and B. No. 9, each	$0 26
Conductor.	
Conductor Hooks	20-10%
Milcor	
"Direct Drive" Wrought Iron for wood or brick	15%
Cotton.	
V. and B. No. 8, each	24
Hay.	
V. and B. No. 1, each	26
Bar Meat.	
V. and B. No. 26, ⅜", each	09
V. and B. No. 28, ½", each	16
Screw Meat.	
V. and B. No. 2, per gro.	6 50
Butchers' "S."	
V. and B. No. 6, each	08
V. and B. No. 8, each	11

HOSE.

	Per. Ft.
½-in. 2 ply molded	9½c to 12¾c
⅝-in. cord	8½c to 10c
¾-in. wrapped	13½c

IRONS.

Sad.	
Genuine Mrs. Potts, nickel plated, per set	$1 55
Asbestos No. 70, per set.	2 10
Asbestos No. 100, per set.	2 30
E. C. Stearns'.	
No. OA Corner, doz. sets	$2 50
No. OB " " "	2 75

KNIVES.

Beet Topping.
Clyde, 9-in. Scimitar Blade, doz. 25%
California 25%

Butcher.
Beechwood Handles, 6-inch blade 25%
Beechwood Handles, 7-inch blade 25%
Beechwood Handles, 3-inch blade 25%

Cooper's Hoop. 25%

Drawing.
Standard 25%
Adjustable 25%
Barton's Carpenters' 25%

Hay.
Iwan's Solid Socket.....25%
Heath's 25%
Iwan's Sickle Edge.....25%
Iwan's Imp'd Serrated....25%

Hedge.
Challenge 25%
Disston's No. 1.....25%

Putty.
Common 25%
Lander's 25%

Scraping.
Beech Handles 25%
Lander's 25%

KNOBS.

Door.	
Mineral .....per doz.	$2 00
Porcelain ..... "	2 00
Jet ..... "	2 00

LADDERS.

Step.	
Common, per ft.	28c
Common, with Shelf, add 10c	
IXL	34c
Challenge, 6 to 9 ft.	55c
10 to 16 ft.	60c

LANTERNS.

	Per doz.
Monarch tin, hot blast	$ 8 25
Dietz No. 2, cold blast	13 00
Best tubular	8 25
Competition lanterns No. 0 tubular	6 90

LAWN MOWERS.

12-inch	$5 20
16-inch	5 85
Ball Bearing.	
4 blade, adjustable bearing.	
14"	$7 50
16"	7 80

LEATHER BELTING.

From No. 1 Oak Tanned Butts.	
Extra heavy, 18-oz.	35%
Heavy, 16-oz.	40%
Medium, 14½-oz.	40%
Light, 13-oz.	50%

LEATHER LACING.

Cut, strictly No. 1.....45%

LEVELS.

Disston, No. 28 Asst.	$22 05
" No. 18, 20 in., each	1 82
" No. 22, 24 in., each	2 40
" Shafting, 6 in.	19 80
" " 6 in. gr. glass	24 20
" No. 1 Asst.	5 75
" No. 2 Asst.	12 40
" 24-26 in., each	1 02
" 28-30 in., each	1 00

LIFTERS.

Stove Cover.	
Coppered .....per gro.	$6 00
Alaska ..... "	4 75

LOCKS.

Barn Door.	
No. 60 Stearn's..per doz.	$11 00
No. 80 " "	20 00

MALLETS.

Carpenters'.	
Fibre Head No. 2, per doz.	$12 00
" No. 3, "	15 50
" No. 3½, "	20 50
Round Hickory .....per doz.	$3 00— 5 00
Tinners'.	
Hickory .....per doz.	$2 25

MATS.

Door.
National Rigid....5 & 10 & 5%
Acme Steel Flexible.....50%

MITRES.

Galvanized steel mitres, and caps, end pieces, outlets...30%
Milcor .....
Galv. one piece stamped....40%

MOPS.

Cotton, Star (Cut Ends).

Pounds	12'	15'	18'	24'-3-oz.
Per doz.	$4 00	4 35	5 50	7 00

Enterprise 16¾%
Parker .....50 & 5%

NAILS.

Cut Steel	$4 70
Cut Iron	4 70
Wire.	
Common	3 80
Cement Coated.	
Small Lots	2 30
Horseshoe.	
Ausable	55 & 5%
Capewell	15%
Perfect	55 & 5%
Putnam	20 & 5%
Star	30 & 5%

NETTING, POULTRY.

Galvanized before weaving 45-10%
Galvanized after weaving 45%

NIPPERS.

Nail Cutting.	
V. & B. No. 30	78c
Double Duty.	
V. & B. No. 60	76c
Hoof.	
Heller's .....40 & 10%	
V. & B. No. 52, each	$2 25

NOZZLES.

Hose.	
Magic .....per doz.	$9 50
Diamond ..... "	5 75

OILERS.

Chase Pattern.
Brass and Copper.....10%
Zinc Plated .....40 & 5%

Railroad.
Brass .....20 & 5%
Coppered .....50 & 5%

Steel.
Copper Plated .....70 & 5%

OPENERS.

Delmonico .....per doz.	$1 30
Never Slip..... "	85

Crate.
V. & B...per doz. $7 25—11 00

PAILS.

Cream.	
14-qt. without gauge, ...per doz.	$9 50
18-qt. without gauge, ...per doz.	11 00
20-qt. without gauge, ...per doz.	11 75
Sap.	
10-qt., IC Tin....per doz.	$4 00
12- " " " "	5 50

Stock.

Galv. qts.	14	16	18	20
Per doz.	$9 75	10 75	12 75	14 50

Water.

Galvanized qts.	10	12	14
Per doz.	$5 75	6 50	7 25

PARERS.

Apple.
Goodell's .....per doz. $10 80
Turntable ..... " 11 40
White Mountain.. " 8 40
Reading No. 78.. " 11 40

PICKS.

Contractors' 40%
Railroad .....50 & 5%

PINCERS.

All V. & B.
Carpenters', cast steel,
No..... 6 8 10 12
Each $0 43 $0 52 $0 61 $0 71
Blacksmiths', No. 10.....$0 64

PINS.

Clothes.
Common, per box of 5 gro. $0 95

PIPE.

Conductor.
"Interlock" Galvanized.
Crated and nested (all gauges) 60-7½%
Crated and not nested (all gauges) 60-2½%
Square Corrugated A and B and Octagon.
29 Gauge 60-10%
28 " 60-10%
26 " 60-10%
24 " 60-10%

"Interlock."
Crated and nested (all gauges) 60-7½%
Prices for Galvanized Toncan Metal, Genuine O. H. Iron, Lyonmore Metal and Keystone C. B. on application.

Stove. Per 100 joints.
26 gauge, 5 inch E. C. nested $16 00
26 gauge, 6 inch E. C. nested 17 00
26 gauge, 7 inch E. C. nested 19 00
28 gauge, 5 inch E. C. nested 14 00
28 gauge, 6 inch E. C. nested 15 00
28 gauge, 7 inch E. C. nested 17 00
30 gauge, 5 inch E. C. nested 13 00
30 gauge, 6 inch E. C. nested 14 00
30 gauge, 7 inch E. C. nested 16 00
T-Joint Made up, 6-inch..... per 100 $40 00

Furnace Pipe.
Double Wall Pipe and Fittings 40%
Single Wall Pipe, Round Pipe Fittings 40%
Galvanized and Back Iron Pipe, Shoes, etc....40%
Milcor, galvanized.....40%

PLANES.

Stanley Iron Bench.....Net

PLIERS.

(V. & B.)
Nut, No. 3, each.....$2 60
" No. 5, each..... 64
" No. 25, each..... 69
Gas, No. 7, each..... 55
" No. 8, each..... 61
" No. 12, each..... 87
Lining or Crimping.
No. 35, each..... 64
Button's Pattern.
No. 6 each..... 61
No. 8 each..... 74
Double Duty, No. 106..... 50

POINTS, GLAZIERS'.

No. 1, 2 and 3..per doz. pkgs. 65c

POKERS, STOVE.

Wr't Steel, str't or bent, ... per doz. $0 75
Nickel Plated, coil handles ..... " 1 10

POKERS, FURNACE.

Each $0 50

PULLEYS.

Awning—Jap'd 10%
Clothes Line 10%
Hay Fork.
Iron Wheel, 5-in..per doz. $2 50
Wood Wheel, 6-in. " 2 65
Wood Wheel, 6-in. pass knot ..... " 3 00
Sash.
Common .....Net
Common-Sense, 2-in.....Net
Empire Pattern, 2-in.....Net
Ideal .....Net
Steel .....Net
Furnace Regulator, doz. lots, per doz. $0 60

PUMPS.

Spray.
Midget Junior....per doz. $3 75
New Misty..... " 6 00
Crescent ..... " 6 50

PUNCHES.

Machine.	Each.
V. & B., No. 11-13, 1½x6..	$0 19
V. & B., No. 90, ⅝x9.....	27
V. & B., No. 10, ⅝x10....	29
V. & B., No. 1-6, ½x6....	12

Center.
V. & B., No. 50, ⅝x4.....$0 14
Belt.
V. & B., No. 101-103.....$0 24
V. & B., No. 108-109..... 33
V. & B., No. 25, ass't..... 3 80

PUTTY.

Commercial Putty, 100-lb. kits $3 55

QUADRANTS.

Malleable Iron Damper.....10%

RAKES.

Garden. Per doz.
Steel, Bow, 12-inch Teeth $8 50
Steel, Bow, 14-inch " 9 25
Malleable Iron, 12-in. " 4 75
Malleable Iron, 14-in. " 5 00
Hay.
Wood, 10 Teeth.....$4 00
Lawn.
30 Teeth.....per doz. $5 50

RAZORS—SAFETY.

Gillette .....per doz. $45 00
Auto Strop ..... " 45 00
Gem ..... " 3 40
Gem (3 doz. lots).. " 3 00
Every Ready ..... " 3 40
Ever Ready (3 dz. lots) " 3 00

RAZORS STRAIGHT.

RAZOR STROPS.

Star (Honing) 50%

FLOOR REGISTERS AND BORDERS.

Cast Iron 20%
Steel and Semi-Steel.....33⅓%
Baseboard 33⅓%
Adjustable Ceiling Ventilators 33⅓%
Register Faces—Cast and Steel
Japanned, Bronzed and Plated.
4x6 to 14x14.....33⅓%
Large Register Faces—Cast, 14x14 to 38x42.....60%
Large Register Faces—Steel, 14x14 to 38x42.....65%

PAPER.

Roofing. Per Square.
Best grade, slate surf. prepd. $2 00
Best talc surfaced..... 2 25
Medium talc surfaced..... 1 60
Light talc surfaced..... 0 95
Red Rosin Sheathing, per ton 75 00

ROPE.

Cotton.
¼, 5-16 in. and larger, per lb.....50c to 60c
Sisal.
1st Quality, base 14½c to 16½c
No. 2 .....13½c to 15c
Manila.
1st Quality standard brands .....18½c to 20½c
No. 2 .....17c to 18½
Hardware Grade, per lb. 17½c

SAWS.

Butchers'.
Atkins No. 2, 14-in.....$12 75
" No. 2, 18-in..... 14 30
" No. 7, 16-in..... 15 85
" No. 2, 22-in..... 15 92
" No. 7, 20-in..... 18 05
" No. 7, 24-in..... 20 20
" No. 7, 28-in..... 22 35
Compass.
Atkins No. 2, 10-in.....$ 5 45
" No. 10, 16-in..... 5 60
" Blades, No. 2, 10-in. 3 25
" " No. 2, 16-in. 3 30
Cross-Cut.
Atkins No. 221, 4 ft.....$3 03
" No. 221, 6-ft..... 4 45
" No. 221, 8-ft..... 6 07
Hand.
Copper Burrs only.....30%
" No. 96, 20-in..... 21 70
Hand and Rip.
Atkins No. 54, 20-in.....$19 50
" No. 54, 26-in..... 24 40
" No. 53, 16-in..... 18 10
" No. 53, 20-in..... 22 90
" No. 53, 24-in..... 26 60
" No. 53, 28-in..... 31 45
" No. 53, 30-in..... 34 15
Keyhole.
Atkins No. 1, complete.. $3 10
" No. 2, complete.. 1 70
Miter Box.
Atkins No. 1, 4x20.....$32 65
" No. 1, 5x22..... 38 00
" No. 1, 6x22..... 42 20
Pruning.
Atkins No. 20, 12-in.... $ 8 45
" No. 10, 16-in.... 18 15
Wood.
Atkins No. 202.....$ 7 19
" No. 318..... 8 75
" No. 906..... 15 50
" No. 1509..... 16 56

SCRAPERS.

Box.
No. 6, six blades each ... 25c
Hog.
No. 6, each..... 25c
Floor (Stearns).
No. 10, each.....$11 50

SCREEN DOOR HINGES.

Cast Iron .....gross $13 00
Steel ..... " 9 50

SCREWS.

Jack.....Standard List 45%
gimlet pointed.....50-5%
gimlet pointed.....40-10%
Wood.
F. H. Bright 80%
R. H. Blued 78%
F. H. Jap'd 74%
F. H. Brass 76%
R. H. Brass 74%
Sheet Metal.
No. 7, ½x ¼, per gross.$0 55
No. 10, ¾x3/16, per gross. 75
No. 14, ⅞x ¼, per gross. 90

SCREW DRIVERS.

Uncle Sam Standard Head.
3 inches, each.....$ 45
5 inches, each..... 52
8 inches, each..... 68
12 inches, each..... 1 02
Uncle Sam Insulated Head.
3 inches, each.....$ 49
5 inches, each..... 57
8 inches, each..... 76
12 inches, each..... 1 14

SETS.

Nail.
V. & B.
No. 100, in cardboard boxes .....doz. $1 44
No. 100, in wooden boxes, ... doz. 1 53
No. 30, assorted.....doz. 39
No. 5, in cardboard boxes, ... doz. 1 25
No. 5, in wooden boxes, ... doz. 1 30
Rivet.
V. & B.
Farmers' $0 15
Tinners' 3-4 ..... 0 40
" 00-0..... 0 60
Saw.
Atkins No. 10....per doz. $3 80
" No. 12.... " 6 20

SHEARS.

	Per Doz
Nickel Plated, Straight, 6"	$12 90
" " " 7"	14 85
" " " 8"	16 80
Japanned, Straight ....6"	11 00
" " ....7"	12 40
" " ....8"	13 80

SHEAVES, SLIDING DOOR.

Common.
Inches 3 4 5
Per set $1 40 1 75 2 40
Hatfield's.
Per set $1 80 2 10 2 75 35

SHINGLES.

Per Square
Zinc (Illinois) $18 00

SHOES.

Milcor.
Galv. Std. Gauge, Plain or corg. round flat crimp...60%
26 gauge round flat crimp..40%
24 gauge round flat crimp..10%
Square Corrugated.
Standard gauge 45%
26 gauge 30%
Conductor 60%

SHOVELS AND SPADES.

Coal.
Hubbard's.

No.	A	B	C	D
1	$16 00	15 10	14 45	13 70
2	16 35	15 60	14 85	14 10
3	16 75	16 00	16 25	14 45
4	17 10	16 35	16 60	14 85

Post Drains & Ditching.
Hubbard's.

Size	A	B	C
14"	$17 15	$16 40	$15 65
16"	17 50	16 75	16 00
18"	17 85	17 10	16 35
20"	18 20	17 45	16 70
22"	18 55	17 80	17 05

Alaska Steel.
D-Handle .....per doz. $3 50
Long Handle ..... " 3 00

SKATES.

Roller.
Ball Bearing—Boys' $1 65
Ball Bearing—Girls' 1 75

SNAPS, HARNESS.

Covered Spring .....Add 30%
Judd's Pattern Add $3 1-6% to list

SNATHS.

Double Ring Bush..per doz. $9 75
Patent Loop, Grass " 8 75
Patent Loop, Bush. " 10 00

SNIPS, TINNERS'.

Clover Leaf .....40 & 10%
National .....40 & 10%
Star 50%
Milcor .....Net

SPRINGS, DOOR.

Perfect.

Nos.	2	3	4	5	6	7
Per doz.	45c	50c	55c	65c	80c	90c

Reliance.

	Light	Medium	Heavy
Per doz...	$1 80	2 40	3 75

Torrey's .....per doz. 1 85

GARDEN TOOLS, GENERAL AND BUILDERS' HARDWARE, MECHANICS' TOOLS, CUTLERY, GUNS, AMMUNITION, SPORTING GOODS AND FISHING TACKLE.

SQUARES.

Steel and Iron.....Net
(Add for bluing, $3.00 per doz. net)
Mitre ..... "
Try ..... "
Try and Bevel..... "
Try and Mitre..... "
Fox's .....per doz. $6 00
Winterbottom's 10%

STAPLES.

Blind.
Barbed .....per lb. 21@22c
Butter, Tub..... " 16@19c
Fence—
Polished .....per 100 lbs. $5 45
Galvanized ... " 6 15
Netting.
Galvanized ...per 100 lbs. $6 54
Wrought.
Wrought Staples, Hasps and Staples, Hasps, Hooks and Staples, and Hooks and Staples .....50 & 10%
Extra heavy 35%

STONES.

Axe.

Hindostan	per lb.	New	Nets
More Grite	"	"	
Washita	"	"	

Emery.
No. 126.....per doz. New Nets
Oil—Mounted.

Arkansas Hard No. 7.....	per doz.	New	Nets
Arkansas Soft.	"	"	
Washita No. 717	"	"	

Oil—Unmounted.

Arkansas Hard	per lb.	New	Nets
Arkansas Soft.	"	"	
Lily White....	"	"	
Queer Creek...	"	"	
Washita	"	"	

Scythe.

Black Diamond	per gro.	New	Nets
Crescent	"	"	
Green Mountain	"	"	
LaMolle	"	"	
Extra Quinnebog	"	"	
Red End	"	"	

STOPS, BENCH.

No. 10 Morrill pattern .....per doz. $11 00
No. 11 Stearns pattern ..... " 10 00
No. 15 Smith pattern ..... " 7 00

STOPPERS, FLUE.

Common .....per doz. $1 10
Gem, No. 1..... " 1 10
Gem, flat, No. 3... " 1 00

STRETCHERS.

Carpet.
Bullard's .....per doz. $3 90
Excelsior ..... " 5 25
Malleable Iron.... " 70
Perfection ..... " 6 30
King ..... " 4 50
Wire.
O. S. Elwood, No. 1 per doz. Nets
O. S. Elwood, No. 2, " "

SWIVELS.

Malleable Iron.....per lb. $0 10
Wrought Steel.....per gro. 4 50

TACKS.

Bill Posters' 6-oz. 25-lb. boxes per lb. 15c
Upholsterers' 6-oz., 25-lb. boxes, per lb.....15½c

TAPES, MEASURING.

Asses' Skin .....List & 40%

THERMOMETERS

Tin Case...per doz. 80c & $ 1 25
Wood Backs " $2 00 & 12 00
Glass ..... " 12 00

TIES.

Bale.
Single Loop, carload lots .....75 & 7%
Single Loop, less than car lots .....70 & 15%

TRAPS.

Mouse and Rat.	Per Gross.
Sure Catch Mouse Traps.	$ 2 10
Vim Mouse Traps.....	2 10
Short Stop Mouse Traps.	1 80
Wood Choker Mouse Traps, 4 hole.....	10 25
	Per Doz.
Sure Catch Rat Traps....	$0 90
Dead Easy Rat Traps....	1 00

Baskets.

Packed in One Bushel Band Stave List per Bushel.

Sure Catch Mouse Traps (360 Traps)	$ 5 25
Short Stop Mouse Traps (360 Traps.).....	4 50
Sure Catch Rat Traps (54 Traps)	3 60
Short Stop Rat Traps (54 Traps)	3 15

Assorted Mouse and Rat Traps.
List per Bushel.

Sure Catch (216 Mouse Traps and 26 Rat Traps)	$4 90
Short Stop (216 Mouse Traps and 26 Rat Traps)	4 25

TROWELS.

Cement.
Atkins No. 6.....$19 50
" No. 9..... 25 50

TWINE.

White Cotton.
Eureka, 4-ply.....per lb. 30c
Jute.
3-ply and 6-ply Bale Lots 22½c

VALLEY.

Milcor .....
Galv. formed or roll.....50-7½%

VISES.

No. 700 Hand,			
Inches	4½	5	5½
Doz.	$11 15	12 00	14 85
No. 701.	In. 4	5	6
Doz.	$11 15	13 00	16 70

No. 1, Genuine Wentworth, Noiseless Saw...per doz. 9 25
No. 3, Genuine Wentworth, Noiseless Saw....per doz. 12 75
No. 500, All Steel Folding Saw .....per doz. 16 00

WASHERS.

Over ⅛ in. barrel lots per 100 lbs.....$6 25
Iron and Steel.

In.	5/16	⅜	½	⅝	¾
	10¼c	9¼c	7¾c	7½c	7 2/5c

WEATHER STRIPS.

Metallic Stitched.
½ in., per 100 ft.....$1 80
¾ in., per 100 ft..... 2 20
Wood and Felt.
⅝ in., per 100 ft.....$1 56
⅞ in., per 100 ft..... 1 56

WEDGES.

Ax. Per Doz. Nets.
Galling .....per lb. Nets
Saw .....per lb. 8½c

WEIGHTS.

Hitching .....per lb. Nets
Sash—f. o. b. Chicago
Smaller lots, per
Smaller lots, per ton.....$50 00

WHEEL BARROWS.

Common Wood Tray.....$3 00
Steel Tray, Competition.... 4 50
Steel leg, garden..... 5 00

WHEELS.

Carborundum 50%
Emery 60%

Well, Ins.....	8	10	12
Per doz.....	$5 50	7 25	8 50

12-in. heavy hoisting, per doz. $25 00

WIRE.

Plain annealed wire, No. 8 per 100 lbs. $3 70
Galvanized barb wire, per 100 lbs. 4 10
Wire cloth—black painted, 12-mesh, per 100 sq. ft... 2 35
Cattle Wire—galvanized catch weight spool, per 100 lbs. 4 60
Galvanized Hog Wire, 80 rod spool, per spool..... 3 98
Galvanized plain wire, No. 9, per 100 lbs..... 4 15

WOOD FACES.

50% off list.

WRENCHES.

Coes Steel Handle,	6-in..	40-10%
" " "	8-in..	40-10%
" " "	10-in..	40-10%
" " "	12-in..	40-10%
Coes Knife-Handle,	6-in..	40-10%
" " "	8-in..	40-10%
" " "	10-in..	40-10%
" " "	12-in..	40-10%

Coes All Patterns.....40-10%

WRINGERS.

No. 790, Guarantee	per doz.	$49 50
No. 770, Bicycle ...	"	47 00
No. 670, Domestic..	"	43 50
No. 110, Brighton...	"	39 00
No. 750, Guarantee..	"	51 00
No. 740, Bicycle....	"	48 50
No. 22, Pioneer....	"	35 50
No. 2, Superb.....	"	25 50

ADVERTISERS' INDEX

The dash (—) indicates that the advertisement does not appear in this issue.

FEDERALITE FINISHES

White Enamels That Possess Lasting Qualities

WHEN it comes to selling your customers White Enamel you have to choose your lines carefully if you are to give the satisfaction demanded. It is common for White Enamels to turn **yellow, to crack** and to **lose luster.**

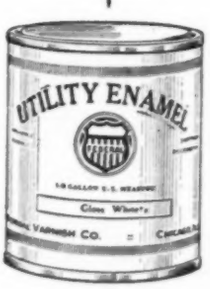
Federalite and Federal White Enamels and Flat White Finishes are all made to meet individual and exact requirements.

With the Federal complete line in stock you can serve your trade with their particular needs—make good profits and give satisfaction.

The reason why Federal Enamels possess lasting qualities is that we pay particular attention to small but important details in making Federal Enamels as well as using only high quality ingredients.

Federalite Coaters and Oil Stains also have special service features that make them superior products.

Let us send you descriptive catalog giving full details—also our dealer helps and prices.



Federal Varnish Company

2837-55 Irving Park Blvd. CHICAGO, ILLINOIS

CLASSIFIED INDEX

Ball Ties

American Steel & Wire Co., Chicago, Ill.

Bolts—Stove.

Kirk-Latty Mfg. Co., Cleveland, Ohio

Brakes—Cornice.

Dreis & Krump Mfg. Co., Chicago, Ill.
Maplewood Machinery Co., Chicago, Ill.

Brass and Copper.

American Brass Co., Waterbury, Conn.
Hussey & Co., C. G., Pittsburgh, Pa.
Copper & Brass Research Ass'n, New York, N. Y.
Merchant & Evans Co., Philadelphia, Pa.

Builders' Hardware

Bullard & Gormley, Chicago, Ill.

Cans—Garbage.

Osborn Co., The J. M. & L. A., Cleveland, Ohio

Castings—Malleable.

Fanner Mfg. Co., Cleveland, Ohio

Ceilings—Metal.

Burton Co., W. J., Detroit, Mich.
Friedley-Voshardt Co., Chicago, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.

Chaplets.

Fanner Mfg. Co., Cleveland, Ohio

Coal Chutes.

Majestic Co., Huntington, Ind.

Cores—Auto Radiator.

Zarco Mfg. Co., New York, N. Y.

Cornices.

Burton Co., W. J., Detroit, Mich.
Friedley-Voshardt Co., Chicago, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.

Cut-Offs—Rain Water.

Milwaukee Corrugating Co., Milwaukee, Wis.
Sullivan-Geiger Co., Indianapolis, Ind.

Eaves Trough.

Berger Bros. Co., Philadelphia, Pa.
Burton Co., The W. J., Detroit, Mich.
Clark-Smith Hardware Co., Peoria, Ill.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.
New Jersey Zinc Co., The, New York, N. Y.

Elbows and Shoes—Conductor.

American Rolling Mill Co., Middletown, Ohio
Dieckmann Co., Ferdinand, Cincinnati, Ohio
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.

Enamel Ware.

Lalance & Grosjean Mfg. Co., Chicago, Ill.

Enamels—Wood.

Cornish & Co., J. B., Chicago, Ill.
Federal Varnish Co., Chicago, Ill.

Fence Gates.

American Steel & Wire Co., Chicago, Ill.

Fenders.

Meyers Mfg. Co., Fred J., Hamilton, Ohio

Files.

Heller Bros. Co., Newark, N. J.

Furnace Fans.

Honeywell Heating Specialties Co., Wabash, Ind.

Furnace Rings.

Walworth Run Fdy. Co., Cleveland, Ohio

Furnaces—Warm Air.

American Furnace Co., St. Louis, Mo.
Brillion Iron Works, Brillion, Wis.
Dunning Heating Supply Co., Milwaukee, Wis.
Excelsior Steel Furnace Co., Chicago, Ill.
Farquhar Furnace Co., The, Wilmington, Ohio
Forest City Fdy. & Mfg. Co., Cleveland, Ohio
Fox Furnace Co., Elyria, Ohio
Hall-Neal Furnace Co., Indianapolis, Ind.
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Henry Furnace & Fdy. Co., Cleveland, Ohio
Hero Furnace Co., Sycamore, Ill.
Hess-Snyder Co., Massillon, Ohio
Homer Furnace Co., Coldwater, Mich.
International Heater Co., Utica, N. Y.
Kruse Co., Indianapolis, Ind.
Lamneck Co., W. E., Columbus, Ohio
Lennox Furnace Co., Marshalltown, Iowa
Majestic Co., Huntington, Ind.
Meyer Furnace Co., Peoria, Ill.
Michigan Stove Co., The Detroit, Mich.
Monroe Fdy. & Furnace Co., Monroe, Mich.
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
Quick Furnace & Supply Co., Des Moines, Iowa
Red Front Furnace & Supply Co., Chicago, Ill.
Scheible-Moncrief Heater Co., Cleveland, Ohio
Schwab & Sons Co., R. J., Milwaukee, Wis.
Standard Furnace & Supply Co., Omaha, Nebraska
St. Clair Foundry Corporation, Belleville, Ill.
Success Heater & Mfg. Co., Des Moines, Iowa
Thatcher Furnace Co., Chicago, Ill.
Utica Heater Co., Utica, N. Y.
Waterman-Waterbury Co., Minneapolis, Minn.
Wise Furnace Co., Akron, Ohio

Garages—Metal.

Milwaukee Corrugating Co., Milwaukee, Wis.

Guards—Fire.

Meyers Mfg. Co., Fred J., Hamilton, Ohio

Handles—Boiler.

Berger Bros. Co., Philadelphia, Pa.

Hangers—Eaves Trough.

Milwaukee Corrugating Co., Milwaukee, Wis.

Heaters—Combination Hot Water.

Melbye Bros. Co., Chicago, Ill.

Heaters—School Room.

Haynes-Langenberg Mfg. Co., St. Louis, Mo.
Hero Furnace Co., Sycamore, Ill.
Meyer Furnace Co., Peoria, Ill.
Monroe Fdy. & Furnace Co., Monroe, Mich.
Standard Furnace & Supply Co., Omaha, Neb.

Horse Shoes.

American Steel & Wire Co., Chicago, Ill.

Hotels.

Spaulding Hotel, Michigan City, Ind.

Jobbers—Hardware

Bullard & Gormley Co., Chicago, Ill.
Clark-Smith Hardware Co., Peoria, Ill.

Kitchen Utensils.

Lalance & Grosjean Mfg. Co., Chicago, Ill.

Ladders.

Kant-Break Ladder Co., Inc., St. Louis, Mo

Lath—Expanded Metal.

Milwaukee Corrugating Co., Milwaukee, Wis.

Machines—Crimping

Bertsch & Co., Cambridge City, Ind.

Machinery—Culvert.

Bertsch & Co., Cambridge City, Ind.

Machines—Razor Blades

Hyfield Mfg. Co., New York, N. Y.

Machines—Stove Pipe

Hemp & Co., St. Louis, Mo.

Machines—Tinsmiths'

Bertsch & Co., Cambridge City, Ind.
Chicago Elbow Machine Co., Oak Park, Ill.
Dreis & Krump Mfg. Co., Chicago, Ill.
Ewert & Kutscheid Mfg. Co., Chicago, Ill.
Hemp & Co., St. Louis, Mo.
Maplewood Machinery Co., Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Iowa
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Whitney Mfg. Co., W. A., Rockford, Ill.
Whitney Metal Tool Co., Rockford, Ill.

Mailing Lists.

Ross-Gould, St. Louis, Mo.

Metals—Perforated.

Harrington & King Perforating Co. Chicago, Ill.

Miters.

Friedley-Voshardt Co., Chicago, Ill.

Miters—Eaves Trough.

Braden Mfg. Co., Terre Haute, Ind.
Milwaukee Corrugating Co., Milwaukee, Wis.

Nails—Slating.

Hussey & Co., C. G., Pittsburgh, Pa.

Nails—Wire.

American Steel & Wire Co., Chicago, Ill.

Ornaments—Sheet Metal.

Friedley-Voshardt Co., Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.
Milwaukee Corrugating Co., Milwaukee, Wis.

Patterns—Furnace & Stove.

Cleveland Castings Pattern Co., Cleveland, Ohio
Quincy Pattern Co., Quincy, Ill.
Vedder Pattern Works, Troy, N. Y.

Pipe and Fittings—Furnace.

Dunning Heating & Supply Co., Milwaukee, Wis.
Excelsior Steel Furnace Co., Chicago, Ill.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Lamneck Co., W. E., Columbus, Ohio
Meyer & Bro. Co., F., Peoria, Ill.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Quick Furnace & Supply Co., Des Moines, Iowa
Red Front Furnace & Supply Co., Chicago, Ill.
Standard Furnace & Supply Co., Omaha, Neb.

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Excelsior Steel Furnace Co., Chicago, Ill.
Hemp & Co., St. Louis, Mo.
Meyer & Bro. Co., F., Peoria, Ill.
Sullivan-Geiger Co., Indianapolis, Ind.

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Berger Bros. Co., Philadelphia, Pa.
Burton Co., W. J., Detroit, Mich.
Clark-Smith Hdw. Co., Peoria, Ill.
Dieckmann Co., Ferdinand, Cincinnati, Ohio
Friedley-Voshardt Co., Chicago, Ill.
Hussey & Co., C. G., Pittsburgh, Pa.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.
New Jersey Zinc Co., The, New York, N. Y.

Posts—Steel Fence.

American Steel & Wire Co., Chicago, Ill.

Punches.

Bertsch & Co., Cambridge City, Ind.
Machine Appliance Corporation, The, Brooklyn, New York
Whitney Mfg. Co., W. A., Rockford, Ill.
Whitney Metal Tool Co., Rockford, Ill.

Punches—Combination Bench and Hand.

Whitney Metal Tool Co., Rockford, Ill.

Punches—Hand.

Machine Appliance Corporation, The, Brooklyn, New York
Whitney Metal Tool Co., Rockford, Ill.

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This new edition contains many solutions of individual pattern problems in every department of sheet metal work, giving the complete methods of laying out all forms of work. It is an ideal text book for either home study or the classroom, as it covers every detail from the selection of tools, through Linear and Geometrical Drawing, to development of Difficult Problems by Triangulation. If you want a book that shows you how to lay out work, get this, the latest book on the subject. It has 544 pages, 892 illustrations and diagrams, measures 10x13 inches and is cloth bound. **Price $6.00.**

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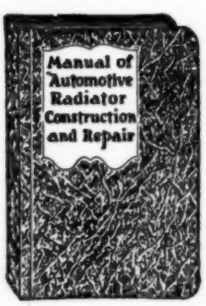

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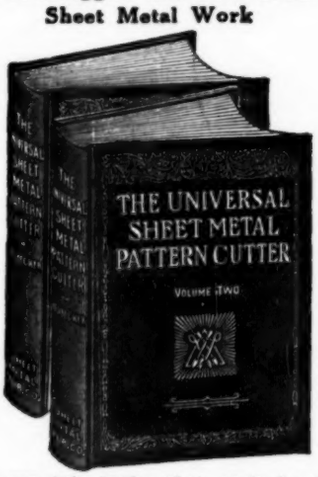
The two biggest and best books on Sheet Metal Work



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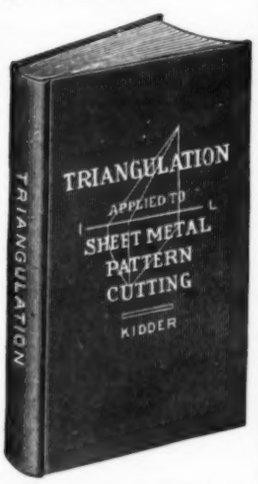

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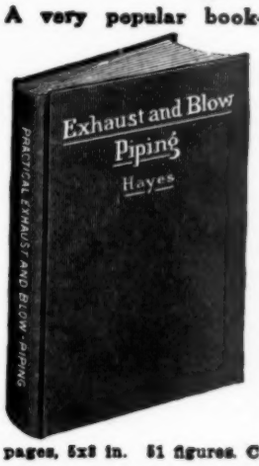

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Neubecker and A. Hopp

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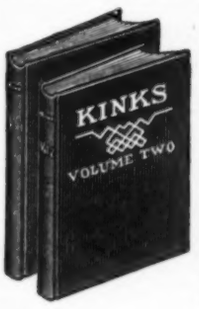
Two of the handiest books published



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Tinplate.
Milwaukee Corrugating Co., Milwaukee, Wis.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Taylor Co., N. & G., Philadelphia, Pa.

Tin—Perforated.
Harrington & King Perforating Co., Chicago, Ill.

Tools—Tinsmith's.
Bertsch & Co., Cambridge City, Ind.
Chicago Elbow Machine Co., Oak Park, Ill.
Dreis & Krump Mfg. Co., Chicago, Ill.
Ewert & Kutscheid Mfg. Co., Chicago, Ill.
Machine Appliance Corporation, The, Brooklyn, New York
Maplewood Machinery Co., Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Iowa
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Vaughan & Bushnell Mfg. Co., Chicago, Ill.
Viking Shear Co., Erie, Pa.
Whitney Mfg. Co., W. A., Rockford, Ill.
Whitney Metal Tool Co., Rockford, Ill.

Torches.
Ashton Mfg. Co., Newark, N. J.
Bernz Co., Otto, Newark, N. J.
Burgess Soldering Furnace Co., Columbus, Ohio
Clayton & Lambert Mfg. Co., Detroit, Mich.
Diener Mfg. Co., G. W., Chicago, Ill.
Double Blast Mfg. Co., North Chicago, Ill.
Hones, Inc., Chas. A., Baldwin, Long Island, N. Y.
Quick Meal Stove Co., St. Louis, Mo.

Transit Companies.
Cleveland & Buffalo Transit Co., Cleveland, Ohio

Trimmings—Stove.
Fanner Mfg. Co., Cleveland, Ohio

Varnishes.
Cornish & Co., J. B., Chicago, Ill.
General Varnish Co., Chicago, Ill.

Ventilators.
Aeolus Dickinson Co., Chicago, Ill.
Arex Company, Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Friedley-Voshardt Co., Chicago, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.
Standard Ventilator Co., Lewisburg, Pa.

Ventilators—Ceiling.
Hart & Cooley Co., New Britian, Conn.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Tuttle & Bailey Mfg. Co., New York

Water Heaters—Oil Burning.
Dangler Stove Co., Cleveland, O.

Wire.
American Steel & Wire Co., Chicago, Ill

Wrenches.
Coes Wrench Co., Worcester, Mass

Wringers—Clothes.
Lovell Mfg. Co., Erie, Pa

Zinc.
Illinois Zinc Co., New York, N. Y.
Merchant & Evans Co., Philadelphia, Pa
New Jersey Zinc Co., The, New York, N. Y.

Zinc—Slab.
Illinois Zinc Co., New York, N. Y.